IDC Energy Insights

Oil & Gas Industry Top 10 Predictions for 2012

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Agenda

- Oil & Gas Business and Regulatory Environment
- IDC Energy Insigths Top 10 Predictions 2012 for Oil & Gas Industry
- Q&A

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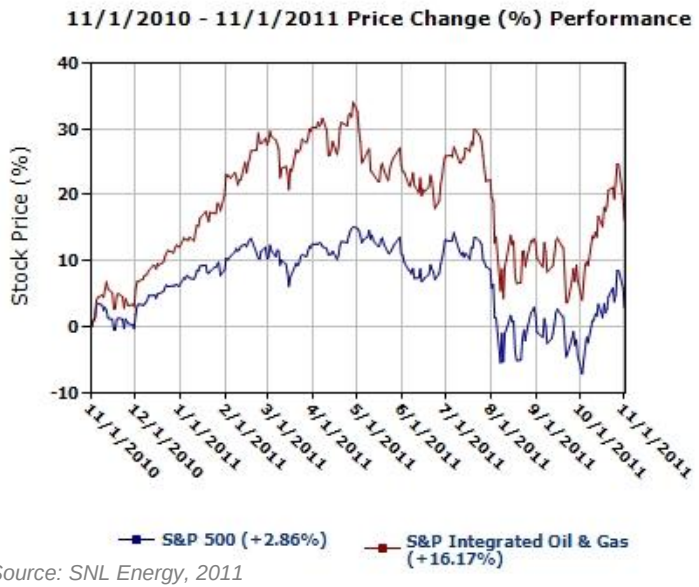
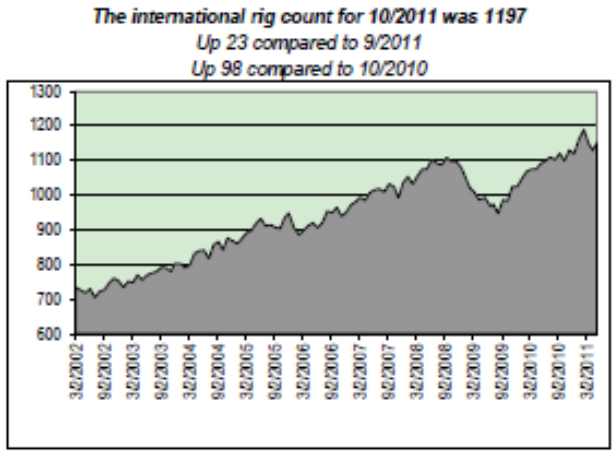
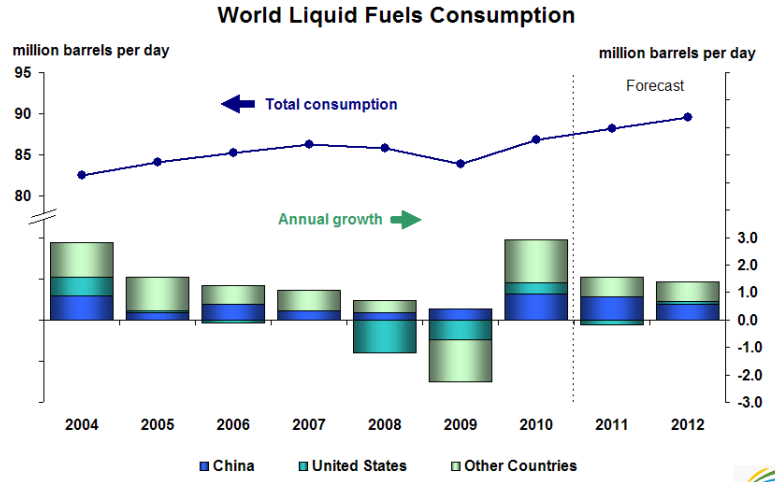
Business and Regulatory Environment
Industry recovering from recession



Source: SNL Energy, 2011



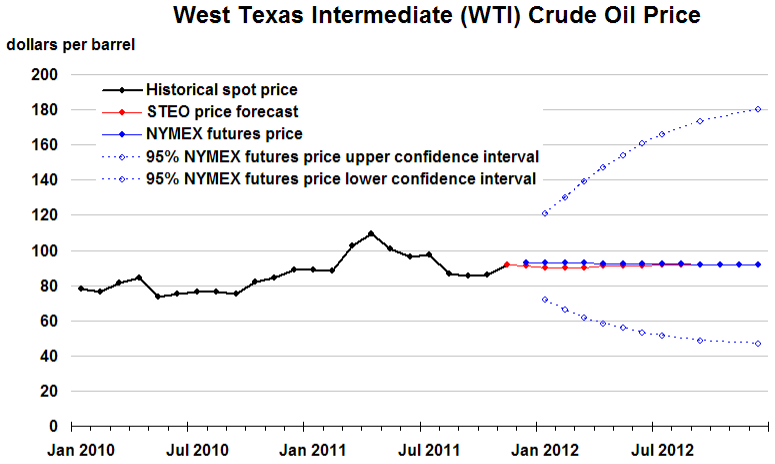
Source: Baker Hughes, 2011



Source: Short-Term Energy Outlook, September 2011

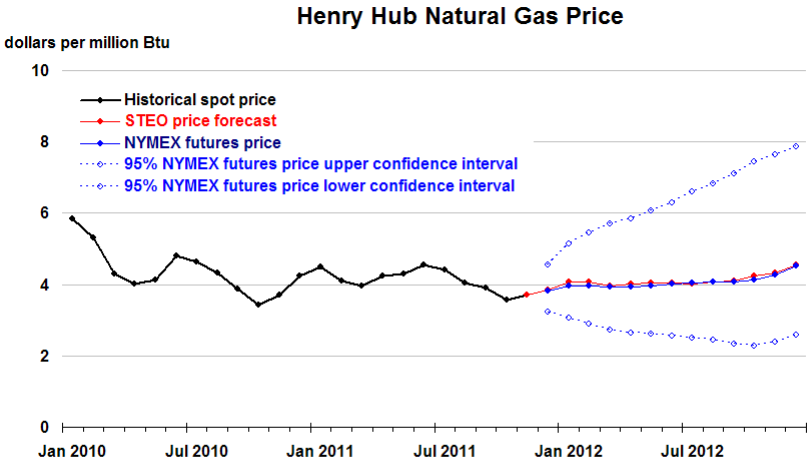
- Oil & gas stocks
  - Outperformed the S&P 500 by a wide margin
- Worldwide oil consumption
  - Expected to grow by 1.4M barrels/day in 2011 and 2012 *(EIA, 2011)*
- Rig counts
  - Above pre-recession levels

Business and Regulatory Environment
High oil prices/low gas prices, little change



Note: Confidence interval derived from options market information for the 5 trading days ending November 3, 2011
Intervals not calculated for months with sparse trading in "near-the-money" options contracts

Source: Short-Term Energy Outlook, November 2011



Note: Confidence interval derived from options market information for the 5 trading days ending November 3, 2011
Intervals not calculated for months with sparse trading in "near-the-money" options contracts

Source: Short-Term Energy Outlook, November 2011

- Oil
  - Will continue to increase marginally but remain below $100/barrel through 2012 *(EIA, 2011)*
  - Likely to exceed $100/barrel in long term with increased volatility
- Natural gas
  - U.S. prices remaining low through 2012 due primarily to domestic shale gas production *(EIA, 2011)*
  - Likely to increase long term due to increased demand from power generation and favorable export markets
  - EU natural gas prices 3x higher than U.S.
  - Asia continuing to dominate world LNG markets with Japan and South Korea as the largest importers and China and India as the highest growth importers

Business and Regulatory Environment
E&P growth

Figure 30. Unconventional liquids production by fuel type, 2008 and 2035
(million barrels per day)

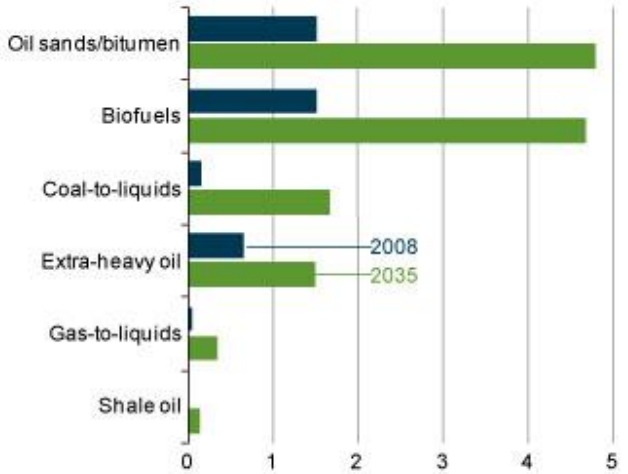
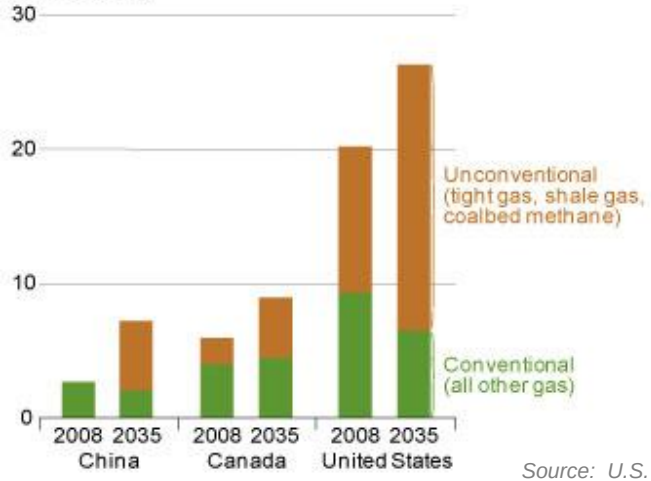


Figure 42. Natural gas production in China, Canada, and the United States, 2008 and 2035
(trillion cubic feet)



Source: U.S. EIA, 2011

- Unconventional resources
  - High oil prices enable development of unconventional liquids (oil sands, biofuels) and unconventional gas (shale gas, coal bed methane)
  - High oil prices also incentivize development of resources in offshore deep water and the Arctic
- M&A activity
  - Deals up 13% in second quarter driven by shale acreage, midstream assets and foreign investors *(PwC)*
- Production increases
  - U.S.
  - Russia
  - Brazil (next big producer)
  - Caspian region
  - Middle East
  - Libya (coming back after disruption)
  - Growth in Canada may be impacted by Keystone XL pipeline decision

Worldwide Oil & Gas Industry Top 10 Predictions 2012

1. Innovation in the industry will be dominated by unconventional resources
2. Independent mid-size E&P companies will continue to be the innovators in shale gas
3. There will be more work required for safety and environmental management
4. Smart drilling and production will be a cornerstone of digital oil field initiatives
5. Capital project management will increasingly focus on planning and portfolios
6. Companies will move toward integrated asset management
7. Regulations will tighten and focus on transparency for energy commodity trading
8. Cloud services will start to expand into core E&P processes
9. Companies will slowly move to fill security gaps with the help of vendors
10. IT spending growth will be driven by emerging economies

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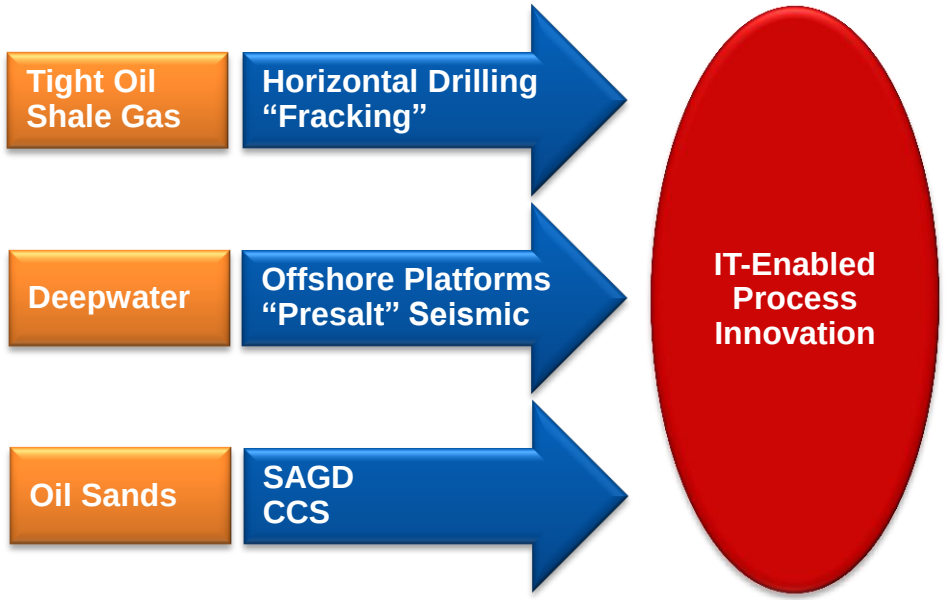
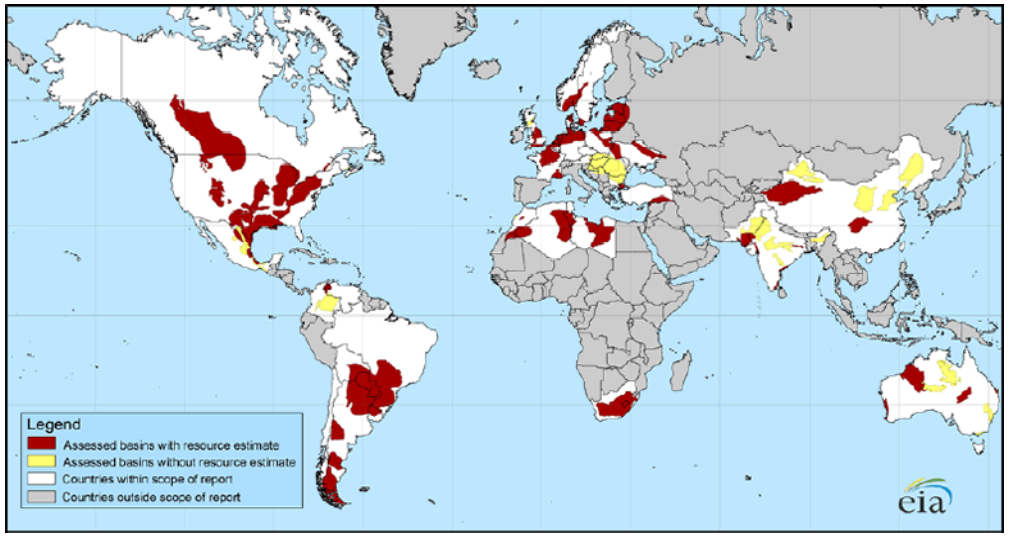
#1 – Innovation in the industry will be dominated by unconventional resources

- Drivers
  - Continued high oil prices
  - Technology advancements
  - Available resources
    - Deepwater offshore
    - Oil sands
    - Tight oil
    - Shale gas
- Predictions
  - Initial E&P technology innovation will be followed by IT-enabled process innovation
  - This later stage innovation will be focused on efficiency (driving out costs) and risk management (public/government environmental concerns)



#2 – Independent mid-size E&P companies will continue to be the innovators in shale gas

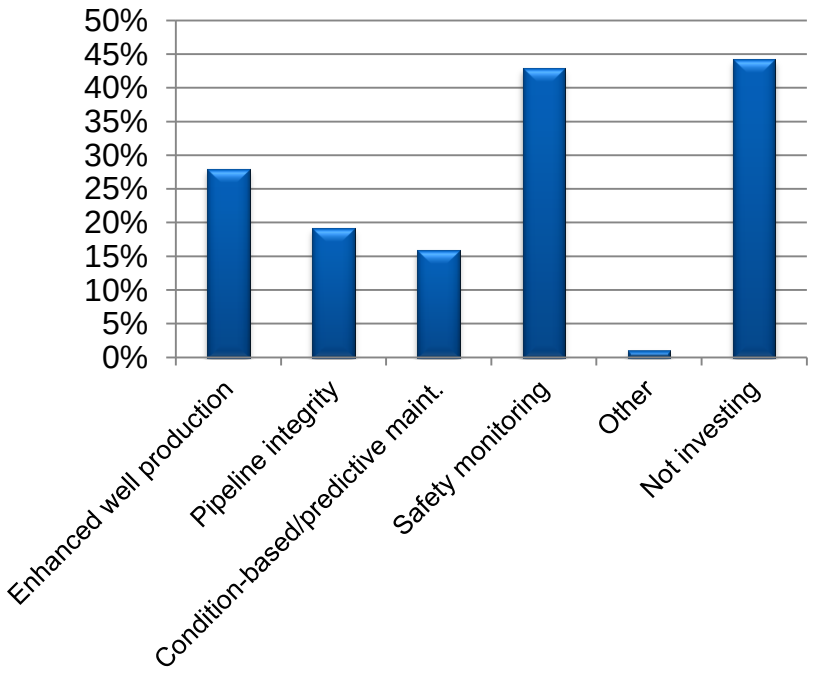
World Shale Gas Resources



- Drivers
  - Availability of resources
  - Tight margins due to low gas prices
  - Larger number of wells
  - Environmental concerns with hydraulic fracturing (fracking)
- Predictions
  - Independent mid-size E&P companies will pioneer a “manufacturing” approach to shale gas production
  - This approach will require increased IT investments in capital project/well planning, rig scheduling, supply chain management, EAM, EH&S, hydrocarbon accounting, ETRM, collaboration and business analytics (especially geospatial)
  - Supermajors, majors and NOCs will continue to gain this expertise through acquisitions (e.g., BHP Billiton/Petrohawk, Shell/East Resources, ExxonMobil/XTO)

#3 – There will be more work required for safety and environmental management

Of the following business functions, which is your company investing in for smart technology solutions in the next one to two years?

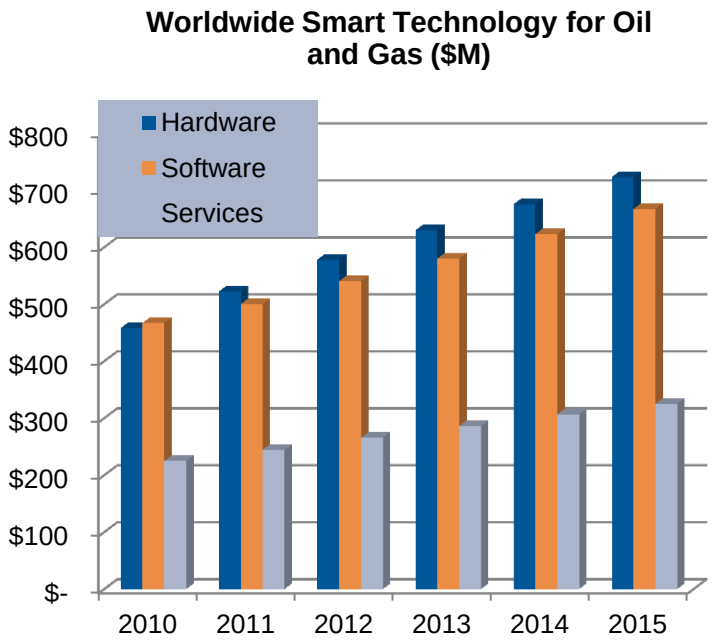


Source: IDC Energy Insights, 2011

Safety monitoring tops North American oil & gas investment in Smart Technology

- Drivers
  - BOEMRE Safety and Environmental Management (SEM) rule makes API RP 75 mandatory, giving oil & gas companies one year to implement
  - Economic loss suffered by the industry as a consequence of Macondo
  - Desire to keep safety first
- Predictions
  - Companies with best practices will set the bar for achievement:
    - Clear accountability, designation of authority, well defined safety and risk metrics
    - Training, safe work practices, advanced maintenance practices, pre-start-up reviews, emergency response and control, and standard operating procedures
  - Oil & gas companies will invest in achieving a holistic view of assets, people and operations
    - Safety monitoring will be the top smart technology investment
    - Integrated applications: EH&S, EAM, incident management, enterprise content management, workflow
    - Analytics including geospatial visualization

#4 – Smart drilling and production will be a cornerstone of digital oil field initiatives



Source: IDC Energy Insights, 2011

- Drivers
  - High cost of drilling, need to reduce non-productive time
  - Challenging physical environments (deep water offshore, arctic) and need to limit personnel in hazardous and remote locations
  - Need to enhance recovery from existing resources
- Predictions
  - Instrumentation for remote control and monitoring will be used to reduce the number of trips to wells in remote locations enabling fully automated wells
  - Oil & gas companies will ask vendors to make hydrocarbon accounting applications capable of using less frequent well tests and data driven models for production values
  - Companies will apply smart instrumentation, real-time communications and advanced analytics to enhance production and to increase “speed to answer”

#5 – Capital project management will increasingly focus on planning and portfolios

- Drivers
  - Increased capital spending (especially in E&P and pipelines)
  - Capital project cost and schedule overruns
  - Skilled labor shortages
  - Challenging and uncertain regulatory environment
  - Regulation (SEM) brings increased requirements for contractor documents and recordkeeping
- Predictions
  - Companies will prioritize upfront planning while establishing processes to monitor performance and manage risk
  - The focus on ROI will broaden from individual projects to global portfolios
  - Integration of multiple applications (engineering, project portfolio mgmt, content mgmt, collaboration, analytics) will be required

#6 – Companies will move toward integrated asset management

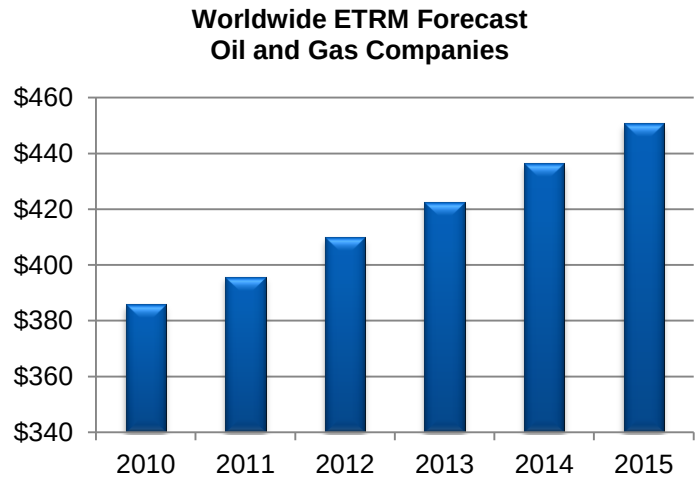
- Drivers
  - Recent incidents such as the Macondo disaster and the San Bruno pipeline explosion
  - Need to reduce non-productive time (NPT)
  - Widespread availability of converged mobile devices, sensors and wireless networks
- Predictions
  - Companies will apply analytics to data from sensors, mobile devices, SCADA and EAM systems to optimize asset management processes
  - Decision making will move toward real-time, enabling operators to identify problems before breakdowns and disasters occur

#7 – Regulations will tighten and focus on transparency for energy commodity trading

CFTC proposes swap transactions to be reported as soon as "technologically practicable"

- Drivers
  - Dodd-Frank and CFTC regulations for more and more timely reporting
    - Swaps data collected into a swaps data repository (SDR). Still to be resolved – will energy company transactions be exempt
    - Collateral and margin requirements for OTC bilateral deals will change
  - Feds armed to enforce new regulations
    - CFTC 2012 budget for technology is at $66 million
  - Volumes at exchanges continue to grow, especially OTC clearing
  - New carbon tax in Australia

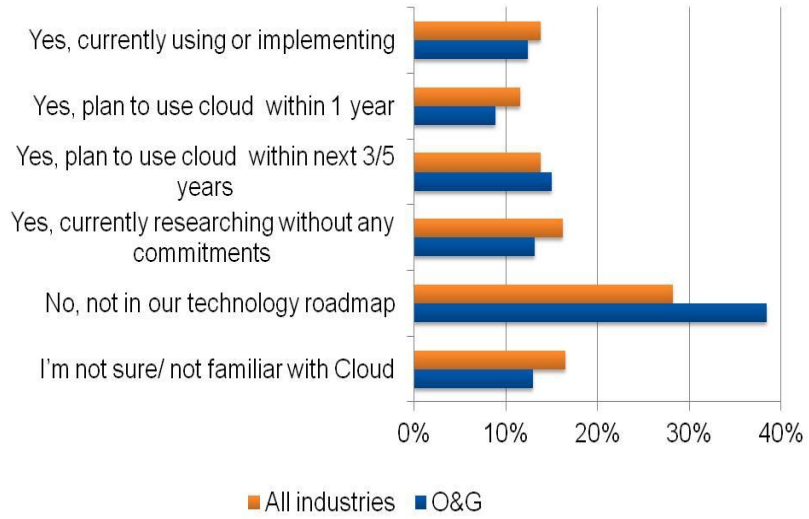
- Predictions
  - Real-time reporting, possibly time stamped, and compulsory clearing will be required for registered swap dealers
  - Companies taking the end user exception will need to submit data on the deal to comply – SDR requirements will drive more data to the exchanges
  - Non-registered companies will need to monitor position limits intraday and confirm transactions
  - Energy companies will look to ETRM vendors to provide easy report configuration, ability to access multiple sources of data for compliance – service firms will be needed to meet tight deadlines
  - Trade surveillance to determine whether at risk in the market and/or at risk of non-compliance will increase in importance



Source: IDC Energy Insights, 2011

#8 – Cloud services will start to expand into core E&P processes

Oil and Gas approach to Cloud: Is the cloud currently on your organization's technology roadmap?

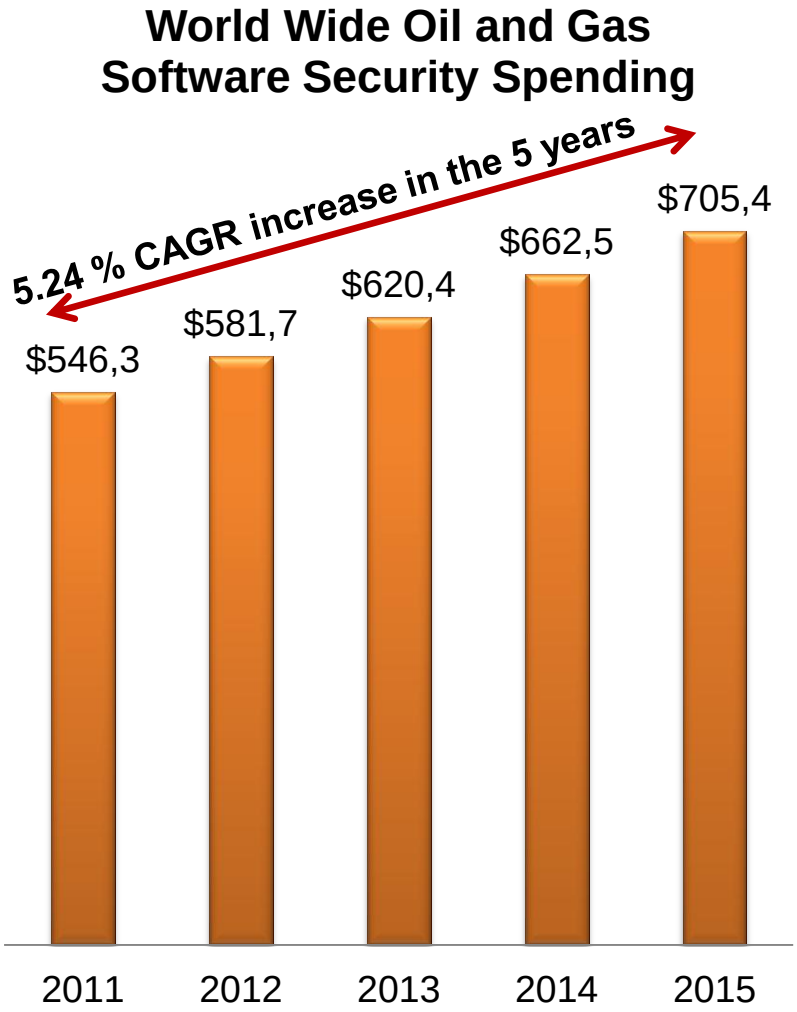


Source: IDC Energy Insights, 2011

Cloud Service Adoption Will Continue to Lag Behind Other Industries

- Drivers
  - Increasing complexity of joint venture operations and number of JV partners
  - Geographic dispersion of E&P assets
  - Need for access to high performance computing (HPC) resources
  - Availability of Big Data (petabyte-scale seismic surveys)
- Predictions
  - Private cloud-based solutions will be increasingly adopted to enable better collaboration among JV partners and establish standard procedures (e.g., license agreement management)
  - Private cloud for delivering HPC services to geoscientists will be piloted in an effort to satisfy spikes in demand and extend capabilities to smaller companies
  - Cloud services will need to overcome concerns about geographic restrictions on data, privacy and security

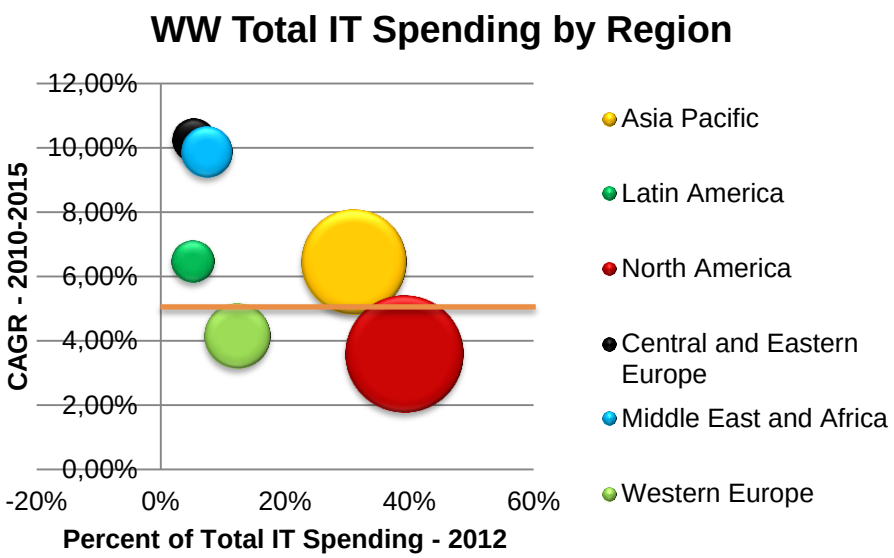
#9 – Companies will slowly move to fill security gaps with the help of vendors

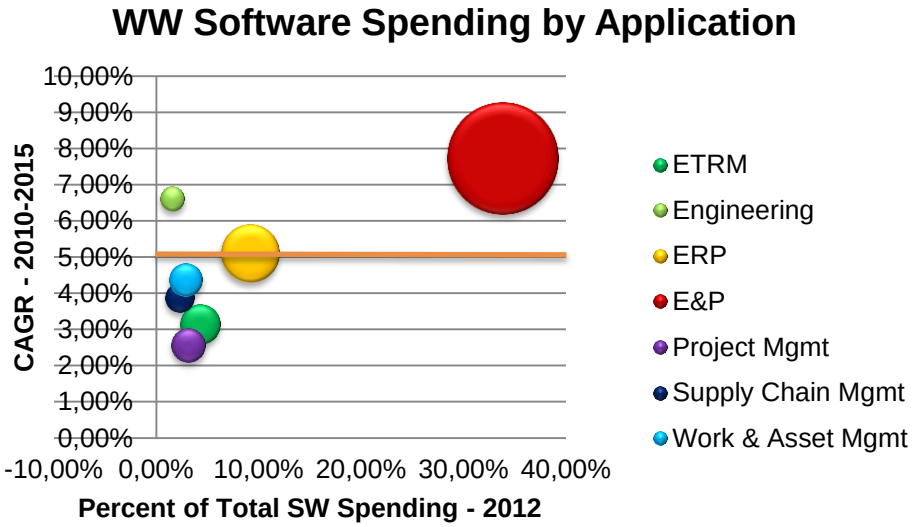


Source: IDC Energy Insights, 2011

- Drivers
  - The external threat landscape continues to grow, pushing oil & gas companies to pay attention to security
  - Governments across the globe are encouraging oil & gas companies to comply with industry standards
- Predictions
  - Security investments will increase worldwide – especially in the areas of antivirus, anti-spam, and identity and access management
  - Companies will invest in securing their B2B environment, which includes partners, contractors, service providers, and suppliers
  - There will be an uptick in breach notification and vulnerability management services

#10 – IT spending growth will be driven by emerging economies





- Drivers
  - Economic recovery/growth in BRIC countries
  - Production increases in Russia, Brazil, Caspian region and Middle East
  - High prices providing incentive to invest in exploration and production
- Predictions
  - Middle East/Africa and Central/Eastern Europe will grow at double the average rate through 2015
  - Asia/Pacific will challenge North America in total IT spending
  - E&P software spending will continue to dominate the market as ERP investment levels out

Questions & Answers

- Have you joined our IDC online community?
  http://idc-insights-community.com/energy

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  - Discussion forums
  - Resource library/complimentary research
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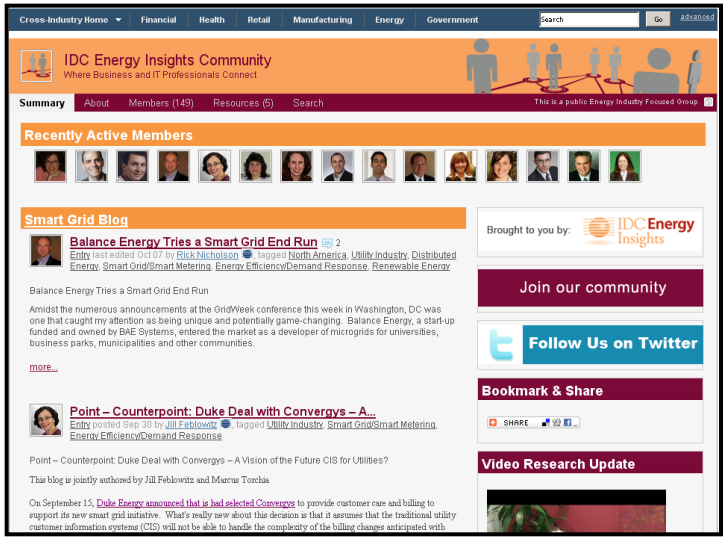
  - Events calendar



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