



*Saudi Aramco's Dhahran's 3-D Visualization Center<sup>1</sup>.*

Is 'Intelligent Energy' (IE) the same as 'Digital Energy,' the 'Digital Oilfield,' the 'Field of the Future,' the 'i-Field' and or any other branded or unbranded buzzwords that different majors, vendors and conference organizers have dreamed up? The answer to that question is yes. They are all the same. But that leaves us with the question of what do they collectively mean! This can be a hard question to answer if you are, as CERA did early in the 21<sup>st</sup> Century, trying to estimate the 'added value' that the digital oilfield will bring to the industry. Or indeed if you work in the division of a major or NOC and are trying to persuade management that investment in 'digital' is better than, say, buying barrels in the ground. On the other hand, as the excellent Society of Petroleum Engineers' Intelligent Energy conference showed, the digital oilfield is a broad church where just about anything goes. It is variously, life of field seismics, fish hook wells, the 'advanced collaboration environment,' just in time maintenance, monitoring and water flood management. As one astute observer put it to us, 'Intelligent energy is really about doing the blindingly obvious!' Or, as BP's Bernard Looney puts it, 'Over time it is harder to explain – it has become the way we do business.'

For some, notably BP, the focus of IE is the collaboration room – variously BP's Advanced Collaboration Environment, Shell's Surveillance Center, Statoil's Collaboration Facility, Saudi Aramco's OSPAS and others. These high tech environments with big screens show what is happening offshore. Initially these were used to bring scarce resources – such as domain specialists – together during mission critical functions such as geosteering, and fracing. But for some, these facilities are evolving into more everyday work environments, supporting a migration of jobs from offshore to onshore. Perhaps the most interesting facet of the onshore 'collaboration facility' is the overlap with the traditional control room. Indeed, BP's Valhall ACE already has a control room built-in. Saudi Aramco takes a more extreme view with its OSPAS<sup>2</sup> Command and Control Center blending collaboration, control and automation.

Another route to the field of the future is the problem focused initiative targeting a specific problem. IE heard from Pemex on its Burgos artificial lift advisory system (ALAS), from Shell on its Gulf of Mexico 'Bridge' for exception-based surveillance, Petrobras GeDiG, Aramco's AFK i-field, Statoil Aasgard operations, Total's data validation and reconciliation, Wintershall's North Sea Integrated Production Management System and Pioneer's Oooguruk, Alaska HySys-based integrated production management system.

In the Health safety and the environment (HSE) Maersk Oil's Peter Kapteijn presented a seminal paper on combining enhanced oil recovery with CO<sub>2</sub> sequestration right from the start of a field's development. Ron Cramer (Shell Global Solutions) argued for a 'virtual person,' constantly monitoring operations – automating fire and gas detection and emergency shutdown systems. Social networking and 'Web 2.0' is making an entry into the upstream as described in presentations from BG and Woodside. Looking to the future, Aramco is 'betting on electro magnetics (EM), gigacell simulation, 'resbots' and borehole gravity to improve mapping of the inter-well space. Chevron envisages more application of the digital oilfield in

<sup>1</sup> Image courtesy Saudi Aramco.

<sup>2</sup> Oil Supply Planning and Scheduling Center – see for instance [http://www.barco.com/projection\\_systems/downloads/BCD\\_apl\\_aramco\\_1.pdf](http://www.barco.com/projection_systems/downloads/BCD_apl_aramco_1.pdf).

brownfields, fields with longer and more complex collection system, more smart wells and also smart equipment.

To return to the question of how much value is created by IE, BP is the most bullish – allocating a billion barrels of reserves to its Field of the Future technology flagship. Petrobras cited a percentage or two increase in operational efficiency due to GeDIg. Others are more circumspect. Schlumberger’s Satish Pai noted that ‘You cannot split out the digital component – it has to be how you do business.’ ExxonMobil’s Russ Spahr concurred that, ‘It is hard to divvy-up the value across technology, mindset and digital. But we do perform evaluation at the project level.’ Whatever the value, all agree that for IE to succeed, people have to change the way they work, otherwise the collaborative work environment is ‘just a very expensive telephone.’

### Highlights

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[The Khurais ‘mega’ i-field](#)

[Business Leaders Session](#)

[Shell’s exception-based surveillance](#)

[CCS/EOR – the ultimate test of E&P ‘intelligence’](#)

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