

# Integrated Operations

## Capgemini's Solution

### Integrated Operations today

Called Smart Fields®, eFields, iFields, 'Digital' Oil Fields, Field of the Future™ or Integrated Operations (IO), these initiatives are aimed at creating value by bringing together the organization's people, processes, and technology to deliver and act on frequently-captured data in real-time. IO improves production, drives recovery, reduces cost, and optimizes work processes and hence productivity.

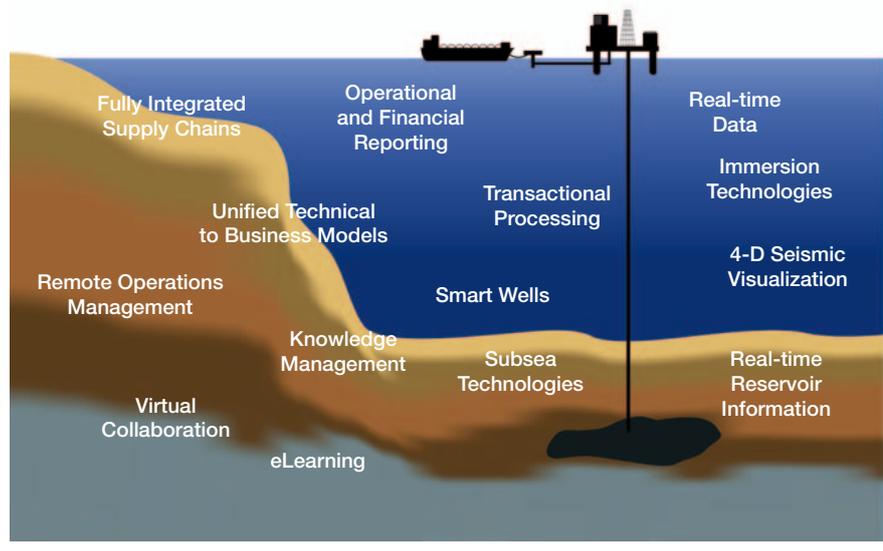
IO is today one of the industry's 'hot-spots'; the leading companies are harnessing its potential, fast becoming a truly networked ecosystem and building the capability for next generation. IO has developed from being the preserve of some of the oil and gas companies – such as BP, Shell and ConocoPhillips

and into the wider world of the National Oil Companies (NOCs) – for example Petrobras and Aramco have highly developed IO programs. We are also starting to see further developments in the service sector where product companies such as Baker Hughes, ISS Group Ltd, and Petroleum Experts begin to understand the value that Systems Integrators, such as Capgemini, can bring to major IO programs – primarily through our rigorous program management skills, our understanding of change management, and integration of legacy systems.

The industry IO experiments of the past are now completed, with many companies accepting IO as 'business as usual'.



**Integrated Operations is cost reduction, work process efficiency and volumetric improvement via ...**



### Key Offers

Capgemini's IO offers cover the full IO program management, with the capability to address all areas, such as IO assessment, IO strategy development including project roadmaps and business case development.

Through our experience, we have developed a repository of IO leading practice. We are therefore able to conduct 'health checks' as to our clients' IO program against what is considered leading practice. From this we are able to analyze the gaps and develop a rectification plan.

When viewed through the technology lens we have expertise in IT architecture development, systems integration, we understand the IO security challenges (see below) and are working to address these issues with some of the world's largest oil and gas companies. Lastly we have designed and written (in the context of the IO business environment) workflow processes and addressed the associated change management issues.

In conclusion, where our clients have expressed a desire to have their own bespoke applications to support them in their IO environment we have both developed and managed applications on their behalf.

When designing or implementing IO related processes or systems it is also important to consider **security principles**. Capgemini's knowledge and experience have already enabled companies to exchange information in a trusted and secure environment. The 10 key security principles are: <sup>1</sup>

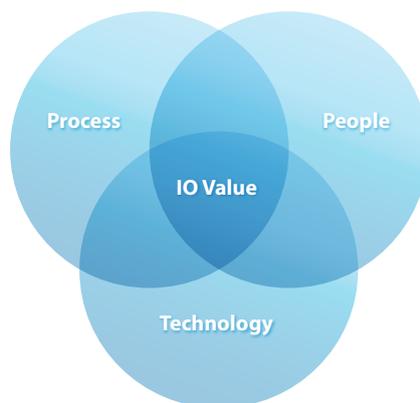
1. Agree baseline security measures between stakeholders
2. Define clear boundaries of responsibility
3. Establish contracts
4. Ensure all data has clear ownership
5. Trust authentication done by source
6. Ensure activity logging
7. Establish multilayer protection
8. Be open
9. Use role- and asset-based access
10. Show social responsibility.

Capgemini considers that there are three key topics that need to be addressed to ensure that an IO program succeeds:

**Technology:** Underpinning Integrated Operations is the availability of real-time and right time data. Improved data management systems are required to manage these increased volumes of data and to distinguish between critical and non critical data. A common IT architecture is necessary to provide a standard approach enabling data flows between different classes of applications. Service Oriented Architecture is a foundational component which allows for flexibility and integration.

**People:** People play a critical role in IO programs, as they are causing a fundamental shift in the way, and where, people work. Training is necessary for onshore and offshore staff to fulfill changed roles. New skills and competencies are also required to adapt to new technology.

**Process:** Managing the changes associated with the transition from traditional operations for IO is considered to be critical to the realization of its full potential. Companies are moving away from their traditional functional processes in order to realize the full potential of IO.



<sup>1</sup> Capgemini Point of View: 10 Security Principles for Integrated Operations ([http://www.capgemini.com/services-and-solutions/by-industry/energy/publications/10\\_security\\_principles\\_for\\_integrated\\_operations/](http://www.capgemini.com/services-and-solutions/by-industry/energy/publications/10_security_principles_for_integrated_operations/))

### Selected Integrated Operations offers

**Analysis & Design:** Capgemini uses an Analysis & Design process to support our clients with their Integrated Operations challenges. Essentially it is a hypothesis-driven capture of the 'as-is' state of the business that is followed by the design of the future state. The subsequent solution is then implemented over a period of time. We have successfully used this solution for our Digital Oilfield clients in Europe and Azerbaijan.

### Accelerated Solutions Environment:

This solution is often used at the start of an engagement to help facilitate, for example, the alignment of the various elements of the business and IT. The facilitated process involves three phases – scan, focus, act – all set in a unique learning environment. We have used this

process to support our clients with their Integrated Operations program in North America and Europe.

**TechnoVision for IO:** One of the challenges facing the oil and gas business is the alignment between the IT and Business elements. TechnoVision is a tool that we deploy with our clients to facilitate better alignment between the various parties.

**Benefits Logic™:** This is a Capgemini standard consulting tool initially developed for use in the Finance Sector. However, we have successfully used the tool to support our engagement with the Shell Smart Fields®. The challenge was to calculate the value that the client's program had delivered to the business since inception. The results were presented at the SPE Intelligent Energy conference in 2010.

### Application development and management:

In a digital world Capgemini has been working, for a number of years, with oil companies in Europe and West Africa to develop and deploy solutions and tools to capture and analyze production and maintenance data, and other information. The management of these tools is also delivered by Capgemini.

**Application selection:** In many cases our clients wish to use 'commercial off the shelf' (COTS) packages rather than develop their own solutions. Capgemini has been engaged by oil and gas companies around the world to use our package selection process that facilitates the acceleration of this task. This process helps our clients achieve their 'first oil' date by mitigating some of the risks.

### Benefits

The main benefits of the IO Program include: Production Increase, Ultimate Recovery Increase, Capex reduction, Opex reduction and Health, Safety and Environment (HSE) improvement. To achieve best value from Integrated Operations technology, it is critical to identify the opportunities for implementation early in the development process or early in the field life and track them through to execution.

Shell has quantified the benefits from the implementation of its Smart Fields program from 2002 to 2009 to **US\$5 billion**. The value has mainly been created by Smart Wells, followed by well optimization and reservoir optimization.<sup>2</sup>

### Capgemini's experience

Capgemini has a global presence in the Oil & Gas industry, providing consulting, technology and outsourcing services to over 200 clients in more than 30 countries. Our services are supported by our Oil & Gas center of excellence (CoE) – a worldwide pool of industry

experts that form a global knowledge base. Our way of working is based on a collaborative business environment.

Capgemini's presence on the Society of Petroleum Engineers (SPE) Intelligent Energy Program Committee for the past five years gives us access to intimate insights as to how the industry is developing and the capability requirements of systems integrators supporting the industry.

We have built up partnerships with the key vendors in order to deliver value to our clients – notably with the SAS Institute, HP, ISS Group Ltd, Intergraph, OSIsoft and Labware. We are continually building up our delivery capability, leveraging our partnership alliances and building new ones where appropriate.

We are present at key industry conferences, such as SPE conferences, Intelligent Energy, Cambridge Energy Research Associates (CERA) conferences, Norwegian Petroleum

Federation (NPF), European Association of Geoscientists & Engineers (EAGE) and more. And we have published

papers in a number of industry journals, including North Sea Oil, European Oil & Gas, and Digital Energy

Since 2004, we have been advising companies on Integrated Operations and we have an unequaled track record of references. Recent examples of Capgemini assignments include the following:

### Leveraging Smart Operations for Petro

Capgemini assisted Petro in performing readiness assessment to gain tangible benefits through Smart Operations practices on the Norwegian Continental Shelf (NCS). The NCS is a mature oil and gas region facing declining production, increasing operating costs and reduced investment. It also has one of the highest labor costs in any global oil and gas region. To counter these, Petro sought new ways to make development of remaining reserves more economical.

The solution was addressed in two parts: The two teams launched a pioneering effort in 2004 to gauge the "Smart Operating" readiness of major operators in the NCS. Operator roadmaps were

<sup>2</sup> In: "Business Value From Intelligent Fields"; Frans van den Berg, SPE, and Robert K. Perrons, SPE, Shell; and Ian Moore, SPE, and Gert Schut, Capgemini; SPE 128245; 23-25 March 2010

developed and applied by gaining insights into other operators' experiences and established leading practices. Two years later, Petoro and Capgemini launched an initiative to assess progress as well as identify leading practices to further evolve the transformative shift. This was followed a year later to accelerate the uptake of leading practices and delivery of benefits in the NCS.

IO has allowed the NCS to build a new organizational capability to optimally harness the potential afforded by rapid emergence of proven tools and techniques, albeit, within the constraints of asset capacity and organizational culture. It is multifaceted, interweaving people, process, technology and cultural dimensions. It is also fast, being recognized as a true capability aligned to the NCS operators' ability to find, develop and produce oil and gas.

#### **A supermajor's integrated operations program**

Capgemini helped a supermajor to implement an IO program in one of its flagship operating units, improving operational efficiency across all its assets. A Collaborative Environment (CE) acts as a hub for real-time support and monitoring of wells and equipment, production optimization and always-on audio visual connectivity between office and asset. This supermajor has recorded significant operational improvements, notably the ability to recover from an unplanned shutdown a day faster than before the introduction of IO.

#### **Integrated Operations Strategy and Implementation for an upstream player**

Capgemini investigated the concept and evaluated industry best practices and implementation techniques with regards to an Integrated Operation Strategy for an upstream player. The concerned field faces a relatively short life span due to reserve size, and technical and economic constraints which have an impact upon the level of operational efficiency. The developed strategy met the high ambitions in terms of integration of people, work processes and technology.



### **About Capgemini and the Collaborative Business Experience™**

Capgemini, one of the world's foremost providers of consulting, technology and outsourcing services, enables its clients to transform and perform through technologies. Capgemini provides its clients with insights and capabilities that boost their freedom to achieve superior results through a unique way of working, the Collaborative Business Experience™. The Group relies on its global delivery model called Rightshore®, which aims to get the right balance of the best talent from multiple locations, working as one team to create and deliver the optimum solution for clients. Present in more than 30 countries, Capgemini

reported 2009 global revenues of EUR 8.4 billion and employs 95,000 people worldwide.

With 1.13 billion euros revenue in 2009 and 12,000+ dedicated consultants engaged in Energy, Utilities and Chemicals projects across Europe, North America and Asia Pacific, Capgemini's Energy, Utilities & Chemicals Global Sector serves the business consulting and information technology needs of many of the world's largest players of this industry.

More information about our services, offices and research is available at [www.capgemini.com/energy](http://www.capgemini.com/energy)

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