

Bits, Bytes, and Barrels -- Executive Series

What the Course is About

The **biggest challenge** oil and gas companies face in addressing digital changes in the industry is equipping their people with a **common** base of **understanding of digital**. Without a common base of definitions, terminology, and frameworks, organizations run the risk that their digital agenda will be defined by specific vendors which can have unintended consequences. Suppliers of technology, IT professionals, universities and consultants all use variants of their own proprietary approaches to digital that, well intentioned, can create poor transparency, bias and prejudice. Without a common base, teams drift into silos, management blocks innovation and Boards cannot execute their oversight role.

Leveraging the book, '**Bits, Bytes, and Barrels: The Digital Transformation of Oil and Gas**', this **corporate training** course is a **one-day digital awareness training program** specific to the **oil and gas industry**. Suitable for Boards, management, and digital delivery teams, this course addresses a broad range of the oil and gas industry and the nature of digital innovations that are most important. The course includes key **management topics** like the nature of digital **impacts** and timing, **risks** that must be managed, the **business case** for change, the role of new **methods** like agile in driving success, **organizing** a digital team, the impacts on **people**, and how to set **roadmaps**.

Why Digital Oil and Gas is So Important

Digital innovations are expected to impact the oil and gas along four vectors: Growing supplies, lowering costs, raising productivity and altering demand.

- Digital innovations applied to resource evaluations and reserves analysis are expected to grow global reserves by 5% or 500b boe, worth \$22 trillion.
- Digital innovations will reduce costs by 20% across the entire supply chain.
- Digital innovations will improve productivity of assets by 20%.
- Digital innovations may erode demand for transportation fuels by 50% by 2040.

The Course Design

The course is laid out around a **fictitious oil and gas services company** that sells a traditional but valuable solution to the oil and gas industry. The company and its products are **not very digital**, and the company is under **competitive threat** to its market. Attendees are presented the basic concepts of digital technology, and learn to apply it to the case company. **Your actual company** can be **substituted** for the fictitious company to make the course **highly personalized** to your situation.

The course is **interactive** and **engaging**, with lots of **teamwork**, **collaboration** and **quizzes**. Participants are **actively engaged** using techniques like world cafe and rice storm, and the curriculum incorporates quizzes, mini lectures, round robins, large group discussions, individual and team work, work sheet completion, and short presentations.

The Course Curriculum

This course is designed to help oil and gas industry professionals raise their digital acumen to help unlock the demand for digital innovation. The course is one day in length.

Module 1 – what is Digital?

- Digital definitions, terminology and illustrations
- Key drivers of digital innovation
- A framework for structuring digital innovations in context
- The leading digital technologies and their emerging oil and gas use cases
- Case examples of specific combinatorial digital innovations and impacts

Module 2 – The Impacts of Digital on industry segments

- Key orthodoxies of the industry that digital transforms
- Reviews of the impacts of digital innovation on segments of the industry

Module 3 – Management Challenges

- Organising a team to tackle digital transformation
- Digital risks to be managed
- Talent management and skills required
- Addressing the challenges of change management

Module 4 – Moving Forward

- The business case for digital innovation

- Strategic planning methods for approaching digital innovations

Who Should Consider Taking This Course

This course is designed for two audiences:

1. oil and gas industry professionals aiming to raise their digital acumen about the opportunities and the threats posed by digital innovations
2. technology industry professionals seeking to understand the oil and gas industry and the potential opportunities for digital innovation

Companies who will find the course of value include:

- Oil and gas companies, particularly integrated companies
- Companies in the upstream, midstream, and downstream
- Field services companies that provide services to the industry
- Managers and supervisors in oil and gas
- Teams of workers tasked with addressing digital innovations
- Consultants to the industry
- Software providers to the industry (cloud, engineering, ERP)
- Suppliers to the industry (telecoms, IoT, SCADA, EPC)
- Investors, financiers, government agencies
- Regulators, policy makers

Detailed Course Content

Digital definitions

- ✓ International Energy Agency, Cisco, IBM
- ✓ The growth of data
- ✓ Power of analytics
- ✓ Expanding telecommunications
- ✓ Moore's law
- ✓ Metcalfe's law
- ✓ Market capitalization of digital companies
- ✓ Framework for digital innovation

Data

- ✓ Importance of data to digital
- ✓ Data types
- ✓ Oil and gas issues with data

Internet of things

- ✓ Use cases
- ✓ Architectures
- ✓ SCADA and IoT
- ✓ Developments

Artificial intelligence

- ✓ Definitions – AI, ML, deep learning
- ✓ Role of AI in the future
- ✓ Use cases in oil and gas – maintenance, field operations, optimization

Automation

- ✓ Robots in the field and office
- ✓ 3D printing and impacts on oil and gas
- ✓ Use cases – submersible, inspections, surveillance, data collection

Cloud computing

- ✓ Types of clouds – private, hybrid
- ✓ Role of cloud computing
- ✓ Impacts of cloud computing on oil and gas business models

Blockchain

- ✓ Definitions, examples
- ✓ ATOMIC – asset, trust, ownership, money, identity, contract
- ✓ Role of blockchain in oil and gas
- ✓ Use cases – VAKT, tracking, carbon

Business issues and digital solutions in the oil and gas value chain

- ✓ The Oil and Gas Industry Process Model
- ✓ Upstream – conventional, unconventional, on-shore, off-shore
- ✓ Midstream – processing, pipelines, transportation
- ✓ Downstream – refining, wholesaling, retail
- ✓ Capital projects – planning, execution
- ✓ Turnarounds and shutdowns
- ✓ Functions (HR, supply chain, finance)
- ✓ Services – field services and support

Management issues in digital

- ✓ IT, OT and digital team design
- ✓ Risks to be managed – cyber, security, data, policy, technology

- ✓ The Risk Matrix for Digital
- ✓ Management of change process and implementing digital change
- ✓ Agile versus waterfall methods
- ✓ Importance of user experience and design

Talent issues in digital

- ✓ Availability of talent
- ✓ Creating trust in digital
- ✓ Leadership of human change
- ✓ Talent attributes of the future

Digital strategy

- ✓ Setting a north star heading for digital innovation
- ✓ Confronting industry norms and practices that digital can impact
- ✓ The Strategy Cascade by Roger Martin
- ✓ Examples of digitally driven strategy – Rio Tinto
- ✓ Determining the business case for digital

Course Pricing

- Tuition is \$500/person
- Materials are \$50/person (copy of Bits, Bytes, and Barrels, plus workshop materials, handouts and supplies)
- Class size minimum is 10, maximum of 25
- Travel expenses for instructor, facilities charges for classroom are reimbursed at cost

Contact Me

Learn more about '[Bits, Bytes, and Barrels: The Digital Transformation of Oil and Gas](#)', by visiting Amazon and other on-line bookshops.

Contact me directly to discuss:

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