io consulting

introduction

2020
overview
we help to shape project developments through early engagement

1 who we are
✓ development consultancy est. by Baker Hughes & McDermott
✓ London, Aberdeen, Abu Dhabi, Houston, Perth & KL offices
✓ team of ~50 from operators, consulting houses & EPCs

2 why we exist
✓ created by our parents as an "early engagement" vehicle
✓ our mission is to maximise value to our clients
✓ aspire to help companies "do Front End Loading (FEL) better"

3 what we offer
✓ technical, commercial & strategic energy & hydrocarbons advice
✓ full stream integrator; we bring an Operator’s perspective
✓ focus on client value drivers by starting with the end in mind

4 how we are different
✓ we are agile & collaborative in our client engagement
✓ we are integrated & holistic in how we approach studies
✓ we bring local know-how & data globally through our parents

5 when we get involved
✓ our primary role begins in the business planning phase
✓ continues through FEL 1 (assess) to FEL 2 (select & preFEED)
✓ FEL 3 (FEED) & beyond we work with you to protect value

6 how we work
✓ we aspire to be your trusted advisor
✓ we are independent of action & easy to contract with
✓ we are cost conscious & promise never to surprise you
our role

we act as a system integrator to deliver a fully integrated development solution

“greater certainty…”

“…translates into greater value”
the io way

an integrated team with an approach founded on the Decision Quality framework

integrated approach

Decision Quality (DQ) framework

1. appropriate frame
2. creative, doable alternatives
3. meaningful, reliable information
4. clear value & trade offs
5. logically, correct reasoning
6. commitment to action

“most solutions looked for here…..”
“…yet most problems occur here”
front end thinking
we really believe in front-end: when correctly implemented the process is proven to add value

Front End Loading (FEL):
- FEL 0: Business Planning
- FEL 1: Assess
- FEL 2a: Concept Select
- FEL 2b: Concept Develop
- FEL 3: Define (FEED)

Decision Gates (DG):
- DG0
- DG1
- DG2
- DG3 (FID)

Operate
- Commission & Production

Early front end
- High Value
- Good project definition & Good execution
- Poor project definition & Poor execution

Front end
- Good project execution
- Poor project execution

Detailed design
- Identification
- Realisation

Start-up
early engagement

draw execute & supplier know how in as early as possible to help identify then deliver on value
our holistic capability

integrated commercial, technical & strategic approach with a common purpose to realise greater value from the front end
our services

mainly focused on the early stages of the project life cycle

core integrated services
- iFDP & business planning
- concept select & definition

specialist consulting services
- advisory
- due diligence
- energy transition
- readiness reviews

supplementary expert services
- flow assurance
- environment & social advisory
- safety & risk
- asset late life opportunities

business analysis services
- financial modelling
- energy risk management
recent projects

a trusted partner delivering long term value
why io
we want to be a trusted partner delivering long term value to you

1. we bring value
   ✓ what we propose can be delivered
   ✓ we provide insights from the supplier side
   ✓ our ethos is to challenge industry norms

2. we are our own people
   ✓ we are independent of action
   ✓ we have the freedom to innovate and pivot
   ✓ we embed our parents expertise into our approach

3. we are on a journey
   ✓ we want to be a trusted advisor to our clients
   ✓ we want to be known for our great people and work
   ✓ to be the consultancy of choice for FEL 0, 1 & 2 projects

4. we are not vanilla
   ✓ we are innovative and collaborative in our thinking
   ✓ we provide a holistic and integrated capability
   ✓ we are an experienced tight-knit team

5. we are open
   ✓ we are easy to do business with
   ✓ we are responsive and bring a can-do attitude
   ✓ we dedicate a single point of contact for studies

6. we do great work
   ✓ a team of highly capable people with the right mind set
   ✓ the freedom to innovate within execution
   ✓ certainty through execute “insight” from parents
our service lines
iFDP & business planning

an integrated, rapid and multi-disciplinary assessment to improve economic value of a field development

what is it

- creative solutions to unlock value from the oil & gas fields
- relevant to the assess and business planning phase (FEL 1)
- finds development plan that best minimises risk and maximises value

what’s involved

- production profiling and de-risking reservoir uncertainty
- cost estimation, scheduling to first production and risk mitigation
- economic modelling and sensitivity analysis techniques

how we do it

- team of subject matter experts quickly analyse the data
- integrated technical, commercial and strategic approach
- Decision Quality (DQ) framework to de-bias the assessments
concept select & definition

founded on a Decision Quality (DQ) process and regular decision dialogue with our clients

what is it

✓ concept select (FEL 2a) and concept definition (FEL 2b) (Pre-FEED)
✓ reflects the iterative nature and high level of uncertainty of development at such an early stage in a project’s life cycle

what’s involved

✓ facilitation of framing workshop and identification of tier 1 decisions
✓ evaluation of concepts both technically and economically
✓ embedding parent knowledge and know-how

how we do it

✓ techniques to evaluate and rank client and partner value drivers
✓ sustainable CAPEX evaluation of concepts (reverse economics)
✓ sensitivity analysis to evaluate concept robustness to key uncertainties
energy transition

shaping the future of our industry by bringing the latest technology innovations & ideas into the front end

what is it
✓ there is a global momentum to make affordable, reliable cleaner energy
✓ the pace of change is accelerating & there is clearly no one solution
✓ but low carbon solutions exist & are rooted in innovative technology

what’s involved
✓ we work with clients to identify low carbon development solutions
✓ we specialise in early stage project planning & strategic advisory
✓ domain expertise from natural gas to energy storage, clean energy & CCS

how we do it
✓ tackle complex decisions with disruptive technology & systems thinking
✓ adopt an agile & transparent approach based on decision quality
✓ access our parents’ portfolio of technology, equipment & knowledge
readiness reviews
identify and protect project value by ensuring that projects stay true to their goals as they change stage gates

what is it
✓ rigorous assessment of project’s readiness to move to the next stage
✓ determine whether a commitment to action can be taken to proceed
✓ challenge decisions and ensure focus decisions have been included

what’s involved
✓ ensuring the design is fully in line with requirements
✓ quantitative evaluation of risks and risk impact of potential changes
✓ assess ownership and critical actions in order to achieve readiness

how we do it
✓ Decision Quality framework to remove cognitive bias from decisions
✓ desktop reviews, interviews and collaborative workshops
✓ economic evaluation and benchmarking to ensure value retention

io consulting
a Baker Hughes & McDermott Venture
5 May, 2020
advisory

an integrated technical, strategic & commercial approach to project & portfolio evaluation

what is it

✓ expert advice focused on achieving the client’s business objectives
✓ covers full breadth of subsurface, engineering & commercial expertise
✓ specialist team combines skills of our most experienced consultants

what’s involved

✓ buy (including farm-ins) & sell-side (including farm-outs) advice
✓ from individual project valuation to full portfolio rationalisation
✓ broad strategic advice, from market insight to contracting strategy

how we do it

✓ experienced team from working for consultants, EPCs & operators
✓ apply a holistic combination of technical, commercial & strategic insight
✓ focused on delivering clear advice backed-up by robust analysis
due diligence & M&A support

independent insight underpinned by expert technical capability

what is it

✓ timely independent expert opinion to lenders, owners & investors
✓ important to evaluate data for completeness, relevance & integrity
✓ provide clear insight on whether to proceed or not with the transaction

what’s involved

✓ subsurface team captures the range of potential recoverable volumes
✓ developments team determine the appropriate development solution
✓ economists construct cash-flow models & determine key value levers

how we do it

✓ established relationships with close proximity to The City of London
✓ unique access to Baker Hughes & McDermott cost & scheduling data
✓ holistic capability identifies value & lowers risk & transaction costs
flow assurance

strategies & design for ensuring uninterrupted hydrocarbon flow from the reservoir to the point of sale

what is it

- ensuring an operable development option with efficient deliverability
- support cost estimation & operating philosophy
- specialist areas such as HIPPS design & system design of HSPs

what’s involved

- steady-state analysis focus initially then into transient simulation
- focused on pipeline sizing, insulation assessments, artificial lift requirements, hydrate management, wax & other flow risks

how we do it

- standard toolkit includes PIPESIM, OLGA, Multiflash & PVTSIM
- broad range of experience throughout the full lifecycle of projects
- work closely with other disciplines to bring an integrated approach
environmental & social

maximise the potential for sustainable development with positive socio-economic outcomes

what is it

✓ assist project teams in managing their environmental & social impact
✓ pragmatic & commercially focused solutions to business decisions
✓ includes oil & gas, pipelines, refining, CCSU, power & energy transition

what’s involved

✓ due diligence & investment support, aligned to the Equator Principles
✓ environmental emissions, noise, oil spills & discharge analysis
✓ impact assessments, stakeholder tactics planning & regulatory reviews

how we do it

✓ experience in over 30 countries with a network of local consultants
✓ relationships with independents, NOCs, IOCs governments & banks
✓ balanced team of environmental & social performance consultants
safety & risk
integration of safety from the earliest stages to minimise risks & maximise potential value through confidence

what is it
- minimise change potential & maximise use of inherently safer solutions
- early engagement to increase stakeholder & regulator confidence
- fully integrated capabilities across all phases of the project life cycle

what’s involved
- early hazard identification to ensure inherently safer design integration
- early phase qualitative & semi-quantitative risk assessment
- understanding of the impact of safety requirements on design

how we do it
- identification, assessment, management and approval approach
- experience across 20+ countries & 20+ clients, onshore & offshore
- integrated with concept assessment, selection & definition capability
asset late life opportunities
end of field life planning that maximises the integrity, reliability & availability of the assets

what is it
- effective late life management is critical to mature oil and gas assets
- requires a clear understanding of the condition of the existing systems
- require significant brownfield engineering design and technical studies

what’s involved
- find solutions that maximise asset integrity, reliability & availability
- focus on areas such as process optimisation, re-configuration, de-bottlenecking & design life extension
- BAT studies, environmental evaluation & permitting support

how we do it
- integrated approach to end of field life planning
- work in conjunction with our Parents’ specialist skill sets
- end of field life strategies anchored by maximum economic recovery
financial modelling

investment decision making informed by robust economic & financial spreadsheet models

**what is it**
- management rely on economic analysis to make investment decisions
- consolidate months or years of work by cross-functional teams
- understand the business case being modelled & the uncertainty ranges

**what’s involved**
- full spectrum of models complexity, including fiscal systems & portfolio
- generate model insights that clearly translate to real world decisions
- establish a base case and run sensitivity and scenario analysis

**how we do it**
- spreadsheet models built to internationally recognised standards
- flexible, appropriate, structured & transparent (FAST) models
- the economics & financial modelling team is FAST Level 1 Certified
thank you

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