

AlixPartners

Making mature fields deliver in the Middle East

Mature field operating models for national oil companies in Gulf Cooperation Council countries



Mistakes made on mature fields

Mature oil and gas fields are not simply lower production versions of abundant greenfield assets—their operating cadence is fundamentally different. The principles applied to a \$500 million facility simply won't translate to the scale found in a mature field, where 500 well workovers of \$500,000 each is the norm.

When global integrated operators have attempted to apply greenfield models directly to mature fields, significant losses have followed. Shell's integrated approach at the Permian shale field in the early 2020s led to a \$491 million pre-tax operating loss. Its operating model was wrong for the fast-cycle execution Permian demands. Shell divested from the field in 2021.

Conversely, U.S. global major ExxonMobil avoided the same fate when it acquired XTO, an expert in developing shale gas and unconventional oil resources. Now a subsidiary of Exxon, XTO wasn't integrated with the wider business and has proven successful at profitably extracting natural resources from this expansive but mature field.

For national oil companies (NOCs) in the Gulf Cooperation Council (GCC), mature fields don't need to be sold to a leaner specialist. Instead, selecting the right operating model can leverage the production-cost advantages of an NOC together with the general and administrative (G&A) cost discipline seen at leaner operators.

In this paper, we outline three operating model archetypes that can deliver the synergy needed to harvest mature fields profitably and set out a function-by-function decision framework to determine the best fit.

Three archetypes

1 Independent model

2 Leverage model

3 Hybrid model

Source:

The divestment of the Permian assets is cited on slide 11 of this [2022 results presentation from Shell](#), and a 2021 market [news release](#) references the \$491 million loss the oil field made in 2020.



Who operates on mature fields and who's winning

Two main cost engines define the performance of mature field operators. As shown below, cost engine 1 is production costs, such as lifting and fluid handling, and cost engine 2 is G&A, corporate overheads, finance, legal etc.

On a cost per barrel of oil equivalent (BOE) basis, integrated majors benefit on production costs through scale, and lean specialists capitalize on their low G&A operating model. As a result, most operators manage one cost engine while the other climbs, eroding profitability. Successful operators win by keeping costs lean across both cost engines.

Cost engine 1 Production cost	Cost engine 2 General and administrative cost
Winning on scale, infrastructure, integration	Where a lean model and fast decisions win
 Lifting cost Pump energy, artificial lift, well services	 Corporate overhead Executive layers, board support, group functions
 Fluid handling Water cut rises 60%+ in mature fields	 Procurement bureaucracy Approval cycles, tender frameworks, vendor management
 Intervention spend Workovers per well per year increase 36x vs. greenfield	 Finance and accounting Group consolidation, statutory reporting
 Integrity and inspection Aging tubulars, flowlines, surface kit	 IT and systems ERP, infrastructure, cybersecurity
 Energy intensity Lift gas, ESP power, water disposal	 Legal, audit, and HR policy Shared corporate services

A design point is what divides success and failure on mature fields

Integrated energy majors win on production cost because their scale gives them the lowest contracted rates on chemicals, services, and energy, and their existing infrastructure absorbs marginal barrels at near-zero incremental cost. They lose on G&A because their corporate machine is designed for greenfield project economics.

Lean specialists win on G&A because their operating model is built around campaign procurement, asset-level authority, and small teams. But they lose out on production cost because they pay rack rates for services and lack integrated infrastructure.

GCC NOCs can run two cost-efficient engines—integrated production and lean G&A—through the right operating model design.

How operators compare

Same wells, same reservoirs, different cost structures. The data clearly shows how different operating models fare across the two cost engines.

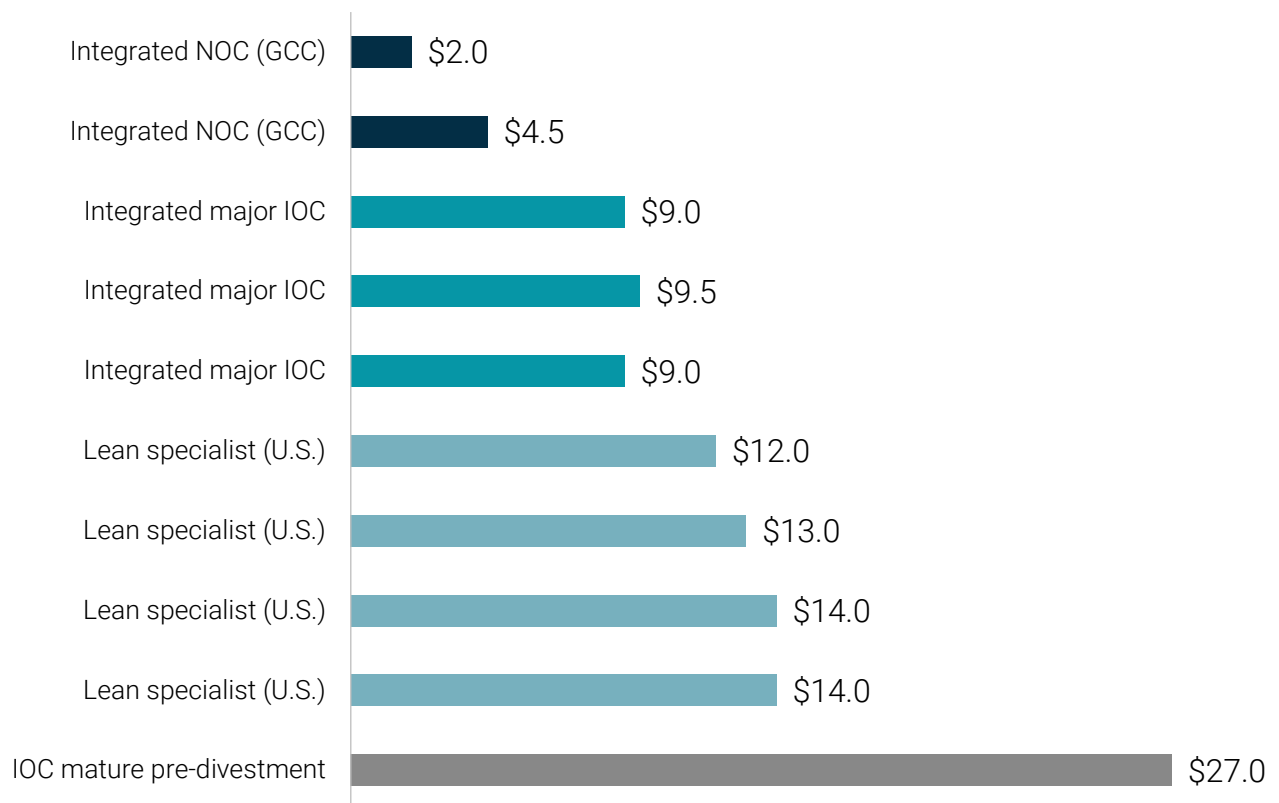


Cost engine 1: Integrated majors win on production cost per BOE

Production cost reflects the unit cost of getting a barrel out of the ground. Scale, infrastructure, contract leverage, and integration drive the relationship between production cost and output level. Integrated majors and

large NOCs are at the bottom of the cost curve. Lean specialists come in higher up, running between \$5-9 higher per BOE, due to rack rates for services and the absence of an integrated midstream.

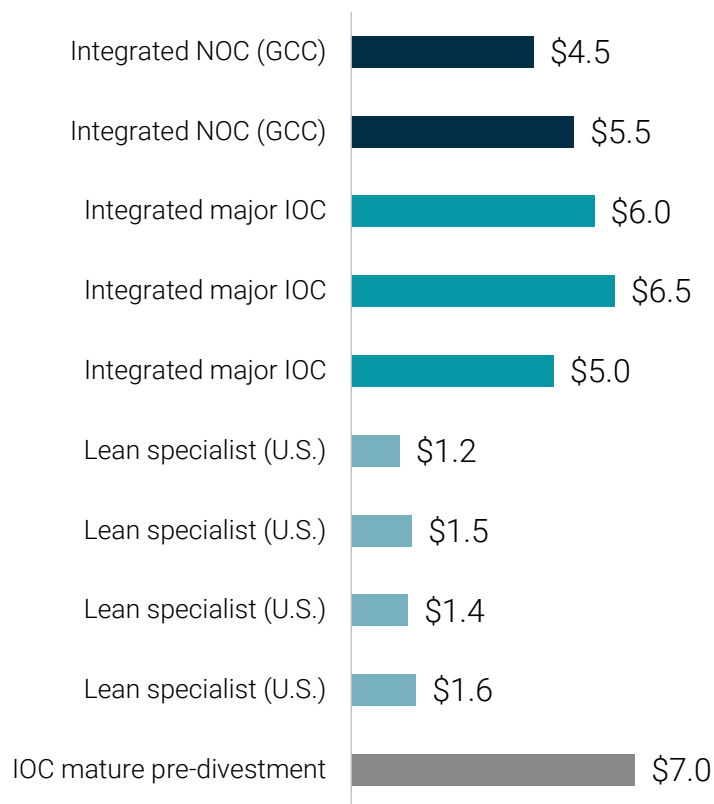
Figure 1: Illustrative production cost per BOE (US\$)



Source: AlixPartners Upstream Benchmark; company 2024 annual reports; Numbers indicative

Cost engine 2: Lean specialists win on G&A per BOE

Figure 2: Illustrative G&A per BOE (US\$)



G&A reflects the corporate machine cost per produced barrel. Lean specialists were designed for fast cycles and asset-level authority, so they keep G&A costs down at \$1-2 per BOE. Integrated majors and NOCs carry the corporate cost of mega-project execution, group governance, and shared services that mature fields do not need. Their G&A often runs at \$4-7 per BOE.

Source: AlixPartners Upstream Benchmark; company 2024 10-K filings; AlixPartners analysis. Numbers indicative.



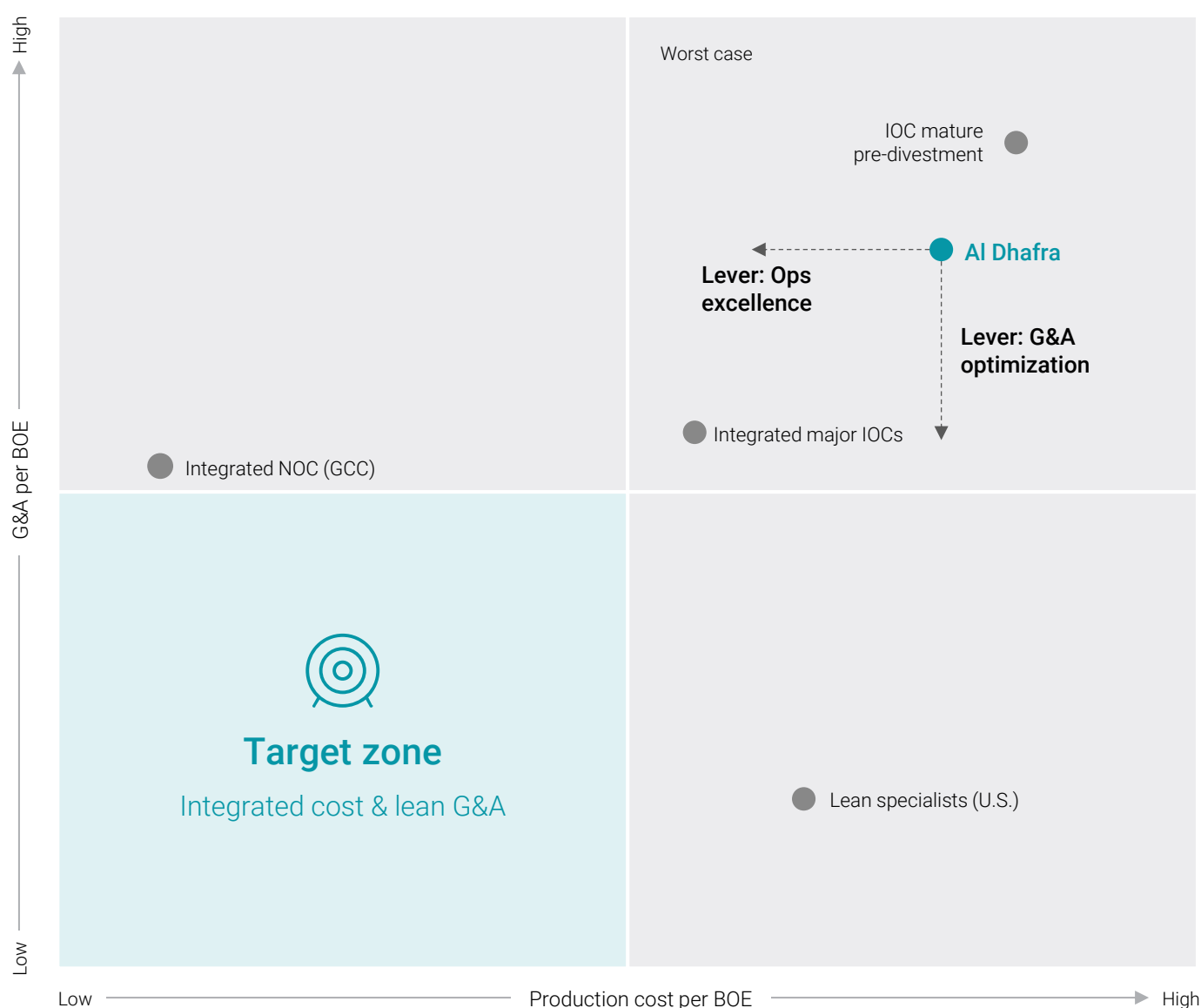
Can the two cost engines be synthesized?

Plot all operators on a quadrant with production and G&A cost axes, and just two clusters form. A cluster of integrated operators sits low on the production cost axis and high on the G&A cost axis. Then a cluster of leaner operators gathers higher on the production cost axis but with low G&A.

There's also one empty quadrant in the lower left corner—the low end of both cost engines and the target

for operating-model design. Neither integrated operators or lean specialists can achieve these cost levels across both engines, nor can they be achieved through acquisition. What will work is an operating model design that builds a lean G&A engine, together with production at scale, through operations excellence and G&A optimization.

Figure 3: Illustrative mapping of two cost engine positions



The cadence cost on mature fields

The key difference between conventional, unconventional, and mature fields is the operating cadence. Despite shared inputs, three different cadences run. While greenfields follow annual cycles and major capex, and unconventional fields adopt factory-style continuous production, mature assets—where each well has its own diagnostic problem—must navigate a chaotic operations cadence characterized by reactivity and intervention.

Figure 4: Contrasting cadence and its implications

Mode	Conventional	Unconventional	Mature
 Cadence	Planned: annual capex, gate reviews	Factory: continuous, well-by-well	Chaotic: reactive, intervention-driven
 Decision unit	Capital committee, \$M+	Asset team, sub-\$5M	Asset/well team, weekly
 Procurement	Multi-year frameworks	Master service agreements	Framework & rapid call-offs
 KPIs	Project internal rate of return (IRR), capex variance	Cost/lateral foot, cycle time, estimated ultimate recovery (EUR)	Netback, intervention payout, decline arrest

Running the same staff, procurement, and KPIs across all three modes drives cost drift. Functions and processes designed for one cadence cannot serve all three effectively.



Shell's integration lesson at Permian

After Shell acquired assets on the Permian Basin from Chesapeake Energy in 2012, it ran negative free cash flow every year between 2013 and 2020, posting a \$491 million pre-tax operating loss in 2020.

After selling its Permian assets to ConocoPhillips in 2021 for \$9.5 billion, ConocoPhillips ran the same plays with a lean operating model characterized by asset-level decision making, continuous learning and fast iteration. The assets posted positive results, and in 2024, the

company added Permian exposure through a \$22.5 billion acquisition of oil and gas company Marathon Oil.

The key difference between Shell and ConocoPhillips is the operating model, not the underlying asset. Trying to retrofit a mature field operation into a conventional field cost structure failed. The same is true in reverse: successful mature operating models don't easily adapt to functions built for greenfield exploration.



ConocoPhillips' lean operating model and asset-level authority in the Permian Basin helped it make more than \$5 billion in cumulative free cash flow—from the same fields on which Shell recorded seven years of losses.

Source for Marathon Oil purchase:
<https://www.conocophillips.com/news-media/story/conocophillips-to-acquire-marathon-oil-corporation-in-all-stock-transaction-provides-shareholder-distribution-update/>

A two-speed problem across six dimensions

As illustrated earlier in this paper, mature fields operate on a chaotic cadence requiring reactive, intervention-driven management, while conventional greenfield functions are designed to suit a planned cadence. Running a mature operation inside this operating model triples cycle times and closes the payback windows available through reactive intervention.

Mature field operations occupy a distinct position, diverging from both unconventional drilling and greenfield-designed models across six dimensions— and no existing template fits cleanly across all of them.

1

Procurement

Cycles vary from 6 to 12 months on conventional fields to 4 to 6-week targets in mature areas. With payback windows on a well in a mature field sitting between 3 to 6 months, slow procurement misses the payback opportunity.

2

Decision rights

While mature field operations require ~\$5 million asset-level intervention authority, conventional finance thresholds force decisions into corporate queues.

3

Cadence

Mature field operations run on weekly intervention cycles—a weekly call cannot survive a quarterly capital cycle.

4

Talent

Mature field operations need specialists in production, integrity, workover, and lift—not project managers.

5

Vendor base

Mature field operations favor Tier-2 service firms and intervention specialists, rather than Tier-1 energy, procurement, and construction (EPC) contractors, which run extended response times.

6

KPIs

KPI design shapes every other decision. Mature field operations should be optimized for netback/BOE targets, lifting cost, decline arrest, payback, and workover success rate.

1 Procurement

The divergence

A conventional field works on 6 to 12 months for routine contracts and 12 to 24 months for major EPC Tier 1 contracts, seen in Aramco's umbrella contracts and ADNOC Onshore Drilling EPCs.

On unconventional fields, master service agreements create 2 to 4-week turnarounds, with vendors rotating between operators, such as Permian Resources' rotating frac crews and Diamondback's monthly call-offs.

Approximate cycle times



The implications

When payback windows close between 3 to 6 months, 6 to 12-month procurement cycles miss the payback opportunity before a contract is even awarded. Templates of successful maintenance outsourcing show what 4 to 6-week cycle times look like in practice.

2 Decision rights

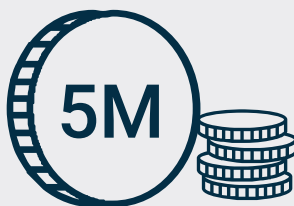
The divergence

The capital committees and board-level sign-off on conventional fields are designed for large capital allocation across multi-year programs.

Unconventional setups delegate more resource spend, between \$5 to 10 million, to asset or well teams, but on a manufacturing rhythm, seen in Diamondback's well-team economics and the EOG Resources delegated authority model.

On unconventional fields, master service agreements (MSAs) create 2 to 4-week turnarounds, with vendors rotating between operators, such as Permian Resources' rotating frac crews and Diamondback's monthly call-offs.

Mature field target asset-level decision authority



Asset-level intervention decisions need <\$5 million, with capital committees reserved for facility-scale capex, calibrating the approval threshold to the average workover decision.

The implications

Unlike greenfield assets, mature assets are not patient. Timings are determined by geology, and a \$2 million workover can close a \$50 million payback window. This is a completely different cycle to the cost equivalent \$2 million facility-design study commissioned on a greenfield. And while unconventional operations have the right thresholds for delegated decision-making, mature fields need a hybrid model that gives asset-level authority on intervention spend and committee oversight on facility programs.

3 Cadence

The divergence

Annual capex plans, quarterly performance reviews and monthly updates dictate the cadence at conventional fields, aligned with major-project gate cycles and regulatory reporting.

Weekly well-planning, daily calls, monthly operating reviews and resources move on weekly cycles at unconventional wells. Permian Resources run a 1,500 feet per day drilling cadence and 265 turn-in-line wells per year and EOG Resources operate continuous rig optimization.

“

Rather than retrofitting weekly intervention into monthly or quarterly schedules, the right operating model design segments cadence by decision type ”

At mature fields, intervention scheduling is weekly, with bi-weekly portfolio reviews and monthly capex commitments at unit level as each well has its own diagnostic problem and weekly decision-making is designed for responsiveness.

The implications

Cadence is not meeting frequency; it is the implicit time constant on every decision. Forcing weekly mature-field decisions through a quarterly capital approval cycle delays small decisions that need to move and rushes large decisions that need greater diligence. The right design segments cadence by decision type: direction-setting on annual rhythm, resource allocation on quarterly rhythm, operational execution on weekly rhythm, all running simultaneously through the delegated authority.

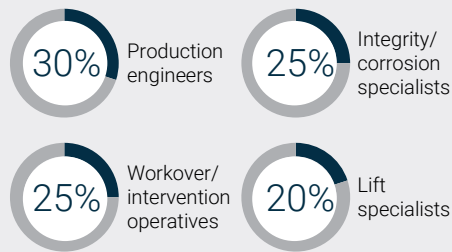
4 Talent

The divergence

Across each field type, operations and decision-making are shaped by talent make-up and employee reward systems.

The technical headcount needed across conventional, unconventional and mature fields varies across each field type. Conventional fields are resourced predominantly by project managers, reservoir engineers, and facility engineers.

Unconventional fields hire drilling engineers and completion engineers for 65% of their technical headcount, with the remainder staffed by production engineers and other technical roles.



At mature fields, the talent profile looks significantly different, more than 50% of the technical headcount is made up of production engineers and integrity/corrosion specialists, with the remaining headcount staffed by workover/intervention operatives and lift specialists.

The implications

Where greenfields require project managers trained for schedule and capex variance, mature fields need production engineers tuned in to maximizing declining production curves circled by uncertainty, specialists that can prolong asset life under corrosion and fatigue, and experts in the fluid mechanics of changing reservoirs. Career arcs should be designed to retain specialists and to avoid losing specialisms over cycles through the use of rotating EPC project managers.

5 Vendor base

The divergence

Conventional fields work with tier-1 EPC and integrated contractors in multi-year framework agreements, such as Saipem, McDermott and Technip Energies.

Unconventional drilling efforts are supported by tier-2 service companies, such as SLB, Halliburton, Liberty Energy and NexTier, with annual MSAs in place and selection largely based on performance.

"Mature fields sit at a different point in the contractor tier mix to either conventional or unconventional operations, with more specialists needed and fewer tier-1 and tier-2 suppliers."

A mix of MSAs and call-off contracts work best on mature fields, to bring specialist intervention contractors in with deep field knowledge. Examples include Petrofac's Service Operators, Altus Intervention, Expro, Coretrax and SLB's intervention services.

The implications

The scale, scope and response times of typical conventional field contractors sit in stark contrast to the vendor mix needed at mature fields. The contractor base for unconventional fields isn't a good fit either. Mature operations should weight their suppliers towards intervention specialists built for small, fast, repetitive operations.

6 KPIs

The divergence

The key performance metrics set by a firm will decide what's funded, deferred and rewarded—and the wrong metrics may lead to the wrong outcomes. This is how KPIs differ across field types:

Conventional	Unconventional	Mature
Project internal rate of return (IRR)	Cost per lateral foot	Netback per barrel of oil equivalent (BOE)
Capex variance	Estimated ultimate recovery (EUR) per well	Lifting cost/BOE
Schedule adherence	Cycle time	Decline rate
Production rate	Drilling speed	Payback period
HSE incident rate	Capital efficiency	Success rate

The implications

As KPI design shapes choices, the implications of misalignment are high. Rewarding efforts to keep capex as close as possible to the approved budget encourages a deferral of interventions, whereas performance measurement that rewards payout from an intervention and slower decline rates, pushes investment and activity into the right areas. Measuring mature fields on KPIs set for other situations leads to performance reading poorly and teams chasing the wrong targets.

Evaluating operating model designs for mature fields

Comparing how mature field operations diverge from their conventional and unconventional counterparts confirms the distinct position they occupy.

Using our operating-model design approach we've developed three operating model designs—independent,

shared-service and hybrid—for the chaotic cadence and specific conditions of operating on a mature field.

Each archetype makes a different trade-off between G&A cost and cadence agility.

Archetype A

A separate legal entity owning its full G&A footprint, from procurement to IT to intervention and integrity; everything sits inside the entity that reports to the NOC board.



Where it wins

- Gives maximum cadence agility as everything is tuned to the mature field context
- Attracts talent with a career arc offer for specialists
- Creates a clean P&L with transparent performance
- Can attract external capital more easily



Where it loses

- Carries the highest G&A cost as all group functions are duplicated
- Forgoes the procurement leverage of a group entity
- Bears higher borrowing costs
- Dilutes the sovereign risk protection



Where it fits

- Non-strategic assets, with low sovereign sensitivity or owned in partnership
- GCC NOCs may be familiar with this archetype for current partnerships or international assets, but the trade-offs are high on mature field assets

Archetype B

An asset-level operating unit that draws on every function at the group level.



Where it wins

- Drives the lowest G&A costs overall
- Maximizes procurement leverage on chemicals, services and energy contracts
- Utilizes the group balance sheet and credit rating for lower financing costs
- Simplifies the setup



Where it loses

- Builds in a two-speed problem as procurement, HR, and IT run on a conventional cadence
- Slows intervention authorizations down to months
- Weakens talent attraction with lack of career arc for specialists
- Blocks efforts to take cost out due to lack of tailoring for mature context



Where it fits

- Fields that are mature but still resemble the plateau phase of drilling
- Past giants of the GCC hydrocarbon reserves such as Ghawar, Burgan and Bu Hasa are a bad fit as operating cadence is chaotic

Archetype C

Through selective ring-fencing inside the group structure, an asset-level unit can own high-impact areas that directly affect operations, intervention, and integrity: procurement, logistics, and HR.

Low-impact functions—such as asset planning, finance and legal—draw on corporate scale.



Where it wins

- Captures **both cost engines**, lower G&A costs of a lean operator and low production costs
- Allows for cadence agility on what matters
- Retains sovereign control; no joint ventures or foreign equity
- Leads to decreasing G&A costs, after initial investment, to fall below the G&A level of shared-services model by year three



Where it works

- Functional decomposition decides how to ring-fence
- Internal SLAs with performance penalties leverage group level functions
- A delegated authority matrix (~\$5 million threshold) establishes checks and balances on asset-level approval
- Cascades KPIs through to the effect on the margin per BOE



Where it fits

- A strategic mature portfolio of major assets such as Bu Hasa, Bab, Asab, Ghawar, Burgan, Magwa-Ahmadi

Decomposing functions to ring fence by impact

Not every function impacts mature-field operations equally; less than half are critical to achieve the cycle-time impact of a hybrid operating model.

High impact ring-fenced functions	 Procurement	Intervention call-outs need 4 to 6-week cycles vs. corporate 6 to 9 months
	 Logistics	Crews, chemicals, parts must arrive on intervention call, not framework cycles
	 HR and talent	Production/integrity engineers need different career arc and compensation than EPC project managers
	 Operations	Weekly intervention reviews, asset-level scheduling, AFE ownership
Medium impact leveraged with SLA	 Asset planning support	Long-term reservoir planning runs on group cadence with mature-unit input
Low impact leveraged functions	 Finance and accounting	Statutory reporting, group consolidation, and treasury all on annual cycles
	 IT and systems	ERP and infrastructure on multi-year cycles. Mature tools layered on top
	 Legal	Concession, contracts, and disputes on corporate calendar
	 Audit and risk	Annual audit, group risk framework, compliance monitoring
	 Treasury and tax	Group balance sheet access, sovereign credit rating, tax pool consolidation

How each archetype scores

Each archetype performs differently when measured against suitability and performance.

Despite not achieving a highest ranking for any of the seven dimensions, the hybrid archetype sees consistent, strong performance across the framework. It would generate the highest \$/BOE outcome at year three of all archetypes, and see the best critical path to cadence agility.

Archetypes A and B each achieve the lowest performance decisively on at least one critical measure. Archetype A performs well on agility and talent, but loses on G&A and procurement leverage. Archetype B delivers the lowest G&A and is best for procurement advantages, but fares less well on cadence and talent measures.

Dimension	A Independent	B Leveraged	C Hybrid
G&A cost	Highest	Lowest	Improves over time
Procurement leverage	Weak	Best	Best on key categories
Cadence agility	Best	Weak	Best on critical path
Talent attraction	Best	Weak	Strong
Cycle time (intervention)	Strong	Weak	Best
Sovereign control	Diluted (if external capital)	Strongest	Strong
\$/BOE outcome (year 3)	Medium	Medium	Lowest

How the hybrid operating model works in the GCC

Each oil and gas field operating mode has its own internal logic defined by six dimensions: the procurement cycle, decision rights, cadence, talent, vendor base and KPIs.

At the top level, operating model design for mature fields makes the choice to fix these elements at the asset level, as in Archetype A, inherit them from the group level, as in Archetype B, or selectively ring-fence the highest impact areas, while leveraging corporate scale for lower impact functions—Archetype C.

For the strategically important mature assets that lie in the GCC, the hybrid approach of Archetype C comes out as the best fit, with strong scores across seven measures of operating performance.

Specific portfolios can validate the best operating archetype using well-defined approaches including the function-by-function decision framework summarized earlier: piloting ring-fencing, validating performance against a baseline, and portfolio extension.

A hybrid operating archetype can also be sequenced over 36 months to protect production through a transition to a new model.

Mature GCC oil fields run on a chaotic cadence. This calls for an intervention-driven, agile operating model, distinct from the operating models applied to conventional greenfield fields or unconventional shale drilling.

The challenge is to combine the low production costs of an integrated group with the low G&A costs of a lean specialist—a position no operator holds today and must be built, not bought.

That hybrid model puts high-impact functions at asset-level control while leveraging corporate scale, and can be implemented in an established sequence that protects production.

As major oil and gas fields in the GCC move into a new production phase, NOCs can avoid the mistakes of other energy majors by building an operating model designed to win on mature fields.

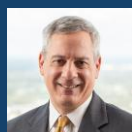


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For more than forty years, AlixPartners has helped businesses around the world respond quickly and decisively to their most critical challenges—circumstances as diverse as urgent performance improvement, accelerated transformation, complex restructuring and risk mitigation.

These are the moments when everything is on the line—a sudden shift in the market, an unexpected performance decline, a time-sensitive deal, a fork-in-the-road decision. But it's not what we do that makes a difference, it's how we do it.

Tackling situations when time is of the essence is part of our DNA—so we adopt an action-oriented approach at all times. We work in small, highly qualified teams with specific industry and functional expertise, and we operate at pace, moving quickly from analysis to implementation. We stand shoulder to shoulder with our clients until the job is done and only measure our success in terms of the results we deliver.

Our approach enables us to help our clients confront and overcome truly future-defining challenges. We partner with you to make the right decisions and take the right actions. And we are right by your side. When it really matters.

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