AI assisted production optimisation

Choosing the next intervention under uncertainty

One-day workshop | Up to 20 participants | Teams of four
Classroom or virtual | A prepared case based on the public Volve dataset

About this workshop

Production optimisation in a mature field means deciding which remaining barrels are worth pursuing and what evidence is needed before acting. This workshop connects well performance, reservoir evidence and intervention economics through a prepared Volve case.

Participants screen opportunities, compare alternatives against a common base case and test how uncertainty changes the ranking. AI-assisted analysis in MaestroOS supports scenario comparison. Teams decide what to act on, what to investigate and what to defer.

What participants will be able to do

1. Screen wells using production trends, decline behaviour and water cut, separating observations from forecasts and assumptions.
2. Use prepared reservoir and seismic evidence to frame an opportunity and identify what remains uncertain.
3. Compare operational changes and well interventions using incremental production, cost, economic limits and the degree of reversibility.
4. Test how price, decline, intervention response and costs change a ranking, and identify information that could change the decision.
5. Defend a prioritised action plan with evidence requirements, monitoring measures and conditions for proceeding, revising or stopping.

Who should attend

Production, reservoir and petroleum engineers; well and intervention teams; facilities and operations personnel; asset managers and economists who assess production opportunities in mature onshore or offshore oil fields.

A working familiarity with oil-field operations is useful. No coding or prior AI experience is required.

The day

The day follows one decision: which production opportunity should the team pursue next? Guided exercises use supplied data, model outputs and economic scenarios, with time to challenge the recommendation and record the reasoning.

MORNING

Diagnose performance and develop options

The field and the base case

Review production history, decline, water cut and injection performance. Define the objective, constraints and the forecast against which any intervention will be compared.

The evidence behind the opportunity

Interpret prepared reservoir saturation maps, history-match outputs and 4D seismic evidence. Discuss what each source supports, where interpretations differ and what it cannot establish.

The intervention menu

Screen injection changes, artificial lift, water shut-off, re-perforation, recompletion and reinstatement. Use the MaestroOS demonstration to explore modelled responses, technical dependencies and how readily each action can be reversed.

AFTERNOON

Compare value and decide what to do

Incremental production and economics

Compare an intervention forecast with the base case. Distinguish oil price from netback, include intervention and operating costs, and examine net present value, payout and remaining economic life.

Uncertainty and information value

Vary decline, price, response and costs. Compare downside exposure and ranking stability. Screen larger commitments such as infill drilling and enhanced oil recovery against field life, and ask which further information could change the choice.

The decision exercise

Teams rank a short list under limited resources, then revisit it when a price or technical assumption changes. They present the preferred actions, deferred options and conditions for proceeding or stopping.

The team decision

Each team produces a concise decision record: the chosen action and alternatives, the supporting evidence, the assumptions that drive value, the main uncertainties and the next step. The debrief compares why teams reached different conclusions and which choices remain defensible when assumptions change.

The aim is a recommendation the team can explain and review as new evidence arrives.

How AI supports the analysis

An instructor-led MaestroOS demonstration shows how an AI-assisted reservoir surrogate can support rapid comparisons of injection scenarios. Other prepared outputs connect production forecasts, intervention economics and uncertainty. Participants examine the inputs and assumptions behind the recommendation before deciding whether it is useful.

- **Evidence first.** Distinguish recorded production from interpreted reservoir behaviour and modelled intervention response. A match to history is one check on a model, not proof of a future outcome.
- **Compare on one basis.** Use consistent assumptions for price, costs, timing and the base forecast. Check whether an apparent gain survives a less favourable scenario.
- **Define the next decision.** Identify the evidence and operating response needed before proceeding further. Consider technical limits, monitoring and the ability to adjust or stop.

Delivery and practical requirements

- **Format.** One instructor-led day, with up to 20 participants in teams of four. Classroom or virtual delivery, for an in-house group or open enrolment.
- **Exercises and software.** Participants work with prepared Volve data, model outputs and decision worksheets. No participant AI account, coding or specialist software installation is required. The day focuses on reviewing and using analysis, rather than building a reservoir model.
- **Confidentiality.** Shared work uses the supplied course case. Participants do not need to disclose their organisation's data or enter it into an AI tool.
- **Venue and access.** Classroom delivery needs team tables, a screen and printed materials. Prepared outputs support the exercises without participant laptops. Virtual participants need a computer, internet access and a meeting platform with breakout rooms.

The Volve case

The workshop draws on the APES x OptiField production optimisation demonstration using Equinor's public Volve dataset. Volve provides the offshore oil-field case. Participants discuss how the decision method applies to their own onshore and offshore settings, with different data, constraints and economics.

Case forecasts and economic scenarios are learning material. They are not claims of achieved production gains or recommendations for a currently operating asset.

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