



SUBSURFACE
INTELLIGENCE
FOR A BRIGHTER
TOMORROW

TECHNICAL BRIEF

How AI Can Collapse the Time to the Next Best Drilling Location

From fragmented subsurface evidence to a smaller, ranked, technically reviewable opportunity set — without replacing the technical team.

DATA
CONTEXT
INSIGHT
OPPORTUNITY

A DEEPER
TOMORROW

Math that drills deeper.

The decision cycle is carrying too much analytical weight.

A drilling recommendation can depend on dozens of evidence types that were never designed to work together. Logs, tops, production, completions, spatial relationships, economics and historical records often arrive with inconsistent identifiers, coverage, units, quality and provenance.

Before a technical team can compare locations, it first has to make the evidence comparable.

- Inventory the available data and determine what is actually usable.
- Resolve well identity, depth references, units, duplicate records and missing coverage.
- Normalize subsurface and production evidence into a common analytical frame.
- Select meaningful analogs rather than merely nearby wells.
- Separate source evidence from derived interpretations and assumptions.
- Build enough documentation that another professional can challenge the result.

What expands	Why it matters	What suffers under time pressure
Well count	Each added well multiplies comparisons	Depth of review
Data variety	More evidence can improve the decision - if reconciled	Consistency
Decision urgency	Rig schedules, acreage terms and capital calendars do not wait	Documentation

AI creates value when it reduces the mechanical burden of screening and organizes the evidence for expert review - not when it hides the reasoning behind a score.

The workflow moves from serial analysis to prioritized validation.

The objective is not to automate judgment. It is to compress the time spent assembling, reconciling and repeatedly comparing evidence so the technical team can spend more of its time on the small set of locations that deserve serious attention.

1



Bring the data

Logs, production, tops, completions, cores, maps and approved supplemental data. No need to separate types, zip them up and load them all at once. We'll sort them out.

2



Establish source truth

Inventory, normalize, connect identity and preserve the distinction between source evidence and derived analysis.

3



Surface the signal

Compare rock, production, completion, spatial and economic evidence across the inventory.

4



Rank the opportunity set

Reduce the field of view to a smaller set of wells, zones or locations worth deeper technical review.

5



Validate before capital

Put assumptions, uncertainty, analog support and source trail in front of the technical team before the decision is made.

The result is a different use of scarce expert time.

Instead of asking, "Can the team review everything before the deadline?" the question becomes, "Which opportunities deserve the team's attention first, and what evidence supports that priority?"

Scale changes the economics of technical attention.

Consider an inventory of 200 wells. Even when the technical questions are familiar, repeating the same sequence of data preparation, interval alignment, analog review, production normalization and economic comparison across the full inventory consumes a large block of scarce professional capacity.

200

WELLS TO SCREEN

**7**MAJOR EVIDENCE
LAYERS**1**RANKED REVIEW
QUEUE

The compression opportunity

Conventional burden	AI-assisted objective
Repeated data cleanup and reconciliation	Normalize once, retain provenance and reuse the structured evidence
Manual cross-well comparison	Screen the full inventory consistently before deeper review
Qualitative analog selection constrained by time	Broaden candidate analog review, then expose why selected analogs matter
Senior technical time spent assembling	Shift senior technical time toward validation and exception handling
Ranking may live in disconnected spreadsheets	Maintain an auditable path from ranking back to supporting evidence

Illustrative workflow only. Actual cycle time depends on data quality, scope, required validation, number of evidence types and the decision being supported.

The goal is not “200 automated answers.” It is a defensible way to decide which of the 200 wells deserve the next hour of expert attention.

A ranking is only useful if a professional can challenge it.

Black-box output is not enough for capital allocation. A technically credible workflow should make it possible to understand what evidence mattered, what assumptions were made, where uncertainty remains and how the recommendation differs from its analogs.

CONTROL	QUESTION TO ASK
Source trail	Can the result be traced back to the underlying well, log, production or completion evidence?
Identity integrity	Are the right records tied to the right well, interval and depth reference?
Analog rationale	Why are these wells comparable – and why were obvious alternatives rejected?
Uncertainty	Does the output distinguish measured evidence, derived values, assumptions and missing coverage?
Economic sensitivity	Does the recommendation survive reasonable changes in price, cost and operating assumptions?
Exception handling	Are contradictions, missing data and unusual wells surfaced for human review rather than silently averaged away?
Reproducibility	Can the same inputs and assumptions reproduce the same analytical result?

If the technical team cannot see why a location ranked where it did, the model has created another review problem instead of reducing one.

Time compression is most valuable when the decision clock is already moving.

The strongest use cases are not defined only by data volume. They are defined by the combination of analytical burden, uncertainty and a real decision deadline.

-5000

-7500

-10000



Rig or drilling schedule pressure

A location decision has to be validated before the operational window closes.



Large legacy inventory

Hundreds of wells contain enough evidence to matter, but not enough staff time exists to review them consistently.



Bypassed or “left behind” opportunity

Older fields may contain intervals or locations that never received modern cross-disciplinary screening.



Acquisition diligence

The team must separate attractive acreage from noisy data before the process becomes an auction or capital is committed.



Financing / investment review

A financier needs a technically explainable view of what supports the development case, not just a headline type curve.



Parent-child / spacing decisions

The best rock can still become a poor capital decision if geometry, depletion or interference is ignored.

What should remain human

- Challenge the geology and reservoir interpretation.
- Reject weak analogs even when a model likes them.
- Set risk tolerance and economic assumptions.
- Decide whether uncertainty is acceptable for the capital at risk.
- Authorize the final drilling, acquisition or financing decision.

Use these questions with any AI-assisted subsurface workflow.

01

What is the source of truth?

Ask how the system preserves original evidence, resolves well identity and separates measured data from derived analysis.

02

Why did this well or location rank here?

Demand the supporting rock, production, completion, spatial and economic evidence – not just a score.

03

Which analogs drove the forecast?

Good analog selection should be explainable in technical terms, including the differences that matter.

04

Where is the uncertainty?

Missing curves, conflicting tops, weak production allocation and sparse completion records should be visible, not buried.

05

Can my technical team reproduce and challenge the conclusion?

The system should accelerate review, not create a proprietary answer that professionals cannot interrogate.

The standard is simple: faster analysis should produce more reviewable decisions - not less explainable ones.

PINN AI / WELL INTEL AI™

Collapse the time. Build the confidence.

Well Intel AI™ is designed for those with existing assets, to turn fragmented subsurface evidence into a smaller, higher-value set of wells, zones and opportunities – with the supporting evidence, assumptions, uncertainty and source trail organized for technical validation.

No one replaces the technical team. PINN AI collapses the time spent on analysis so professionals can validate what the evidence shows – and focus on what they do best.

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WHAT WOULD THIS LOOK LIKE ACROSS YOUR WELL INVENTORY?

Schedule a 20-minute discussion to walk through the decision you are trying to accelerate.

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About PINN AI

PINN AI develops Automated Subsurface Intelligence™ for oil and gas operators, technical teams, acquisition teams, investors and energy financiers. Well Intel AI™ supports analysis of assets you own. Acquisition Finder™ supports analysis of assets you may want to buy. Both are built around the same principle: a recommendation is only as defensible as the evidence beneath it.

DEEPER INSIGHTS
BRIGHTER DECISIONS

This brief is for informational purposes and does not constitute engineering, geological, investment or financial advice. Results depend on available data, assumptions, validation scope and the specific decision context.