

ASSET RELIABILITY / ENGINEERING CASE STUDY

Lubricant Analysis

An integrated lubricant management system

What began as a brief to draft sample commentary automatically became Viscorai™, a fully connected lubricant management system that is now live and commercially available. Through first-hand experience as end-users, The Propel Group broadened the scope to cover sampling, laboratory interpretation, technical support, maintenance follow-up and the commercial conversations that follow, all centred on value and customer experience. The result gives a lubricant supplier a unique, holistic view of their customers, from the moment a sample is taken to the action(s) it generates.

GOING DEEPER

Viscorai™ covers an asset and sample-point register, QR-enabled mobile capture, chain-of-custody tracking of kits, cited commentary, technical Q&A over a verified document library, customer reporting, fleet dashboards with anonymised peer benchmarking, three configurable oversight modes and recurring-issue case management.

THE VALUE CASE AT A GLANCE

The problem

Used oil analysis matters more than ever, yet the experts who interpret it are retiring, commentary varies from analyst to analyst, and the programme is too often seen as a cost centre.

The value

Consistent, expert-quality commentary in seconds; earlier intervention for customers; and a differentiated programme for the supplier.

Extra value, at little or no extra cost

Smart contracts cut billing admin. Benchmarking shows how products perform in the field. Freed-up specialists can offer services such as system flushing.

Why Propel

Built from first-hand experience as end users of oil analysis, with the digital skill to make AI trustworthy: a glass box, not a black box.



Concept illustration created for this case study; not a photograph of a customer's site.

From one task to value-led digital transformation

Used oil analysis now carries more weight than ever. As maintenance moves towards condition-based and predictive approaches, each sample feeds directly into the decision to intervene. Yet the engineers who can read a report and make the call are retiring faster than they can be replaced. Their knowledge often leaves with them, and two analysts can write up the same sample in two different ways.

The original question was a focused one: how could laboratory results, past evaluations and in-house technical knowledge be used to draft reliable commentary on each sample? Propel saw a bigger opportunity and widened the scope to the whole lubricant lifecycle: sampling in the field, tracking each sample to the laboratory, commentary and technical answers that cite their sources, fleet insight, and cases that lead on to technical support and commercial follow-up.



THE APPROACH

How it works

The system joins up the physical journey of each sample with the analysis and the customer's response. A single shared record of every piece of equipment and every sample connects the people in the field, the laboratory data, the supplier's specialists and its commercial teams. As a result, every report can lead to an action with a named owner and a recorded follow-up.

THE OPERATIONAL THREAD

**Capture**

Equipment, QR codes and kits

**Interpret**

Lab results and sources

**Resolve**

Review and cases

**Develop**

Service and follow-up

01

Connect the equipment, the sample and its journey

Every record starts with the piece of equipment and the precise location the sample is taken from. Using the mobile app, field staff scan a QR code at the point the sample is drawn, so it is matched to the right piece of equipment automatically, and add notes/photos as needed. Kit status and courier tracking follow each sample from collection to arrival at the laboratory. Nobody has to piece together which sample is which, or where it has got to, from a trail of separate emails and phone calls.

The system can also take care of the paperwork. When a sample's QR code is scanned on arrival at the laboratory, that scan can trigger a smart contract, which automatically raises charges agreed in advance: the laboratory charging the lubricant supplier or service provider for the analysis, and the supplier charging its customer for the service. The laboratory scan is used because it confirms the sample has actually been received. Each charge is raised at the right moment, on the agreed terms, with the sample record as proof. There's no month-end reconciliation of sample logs against invoices.

GOING DEEPER

Assets and sample points anchor the data model. The mobile app supports QR scanning, capture of notes and photos, and kit and courier events provide full chain of custody through to laboratory receipt. The laboratory-receipt QR scan can execute pre-agreed smart contracts between the parties (laboratory to supplier/service provider, and supplier/service provider to end customer), with the sample record serving as the audit trail.

02

Turn laboratory results into interpretation you can check

Robust rules check each laboratory reading against its limits and the equipment's history, and give a clear red, amber or green assessment with the reasoning behind it. AI then drafts the commentary an experienced analyst would have written, based on those findings, the equipment, the lubricant's specification and the supplier's own technical library. Every draft cites its sources and carries a confidence rating. Where there's insufficient evidence, there's no guesswork: the draft goes to an expert for review.

GOING DEEPER

Deterministic rules assess limits and trends; AI drafting is grounded in those findings and retrieved sources; every output carries a confidence score; three oversight modes (fully autonomous, oversight by exception against a configurable confidence threshold, and full supervision) govern when subject-matter experts review.

THE APPROACH

Oversight you set

The supplier sets how much human oversight follows, typically in line with the level of service the customer has chosen:

Fully autonomous

Commentary and technical answers are issued automatically, with no human step.

Oversight by exception

Anything that clears the supplier's confidence threshold is issued automatically. Anything that falls short is held for review by the lubricant manufacturer's technical specialists.

Full supervision

Every response is reviewed and approved by the specialists before it is issued.

MORE AUTOMATION

MORE EXPERT OVERSIGHT

03

Close the loop with the customer

Published reports, equipment trends and technical help all sit within the customer's own workflow. Everyone using the system, from field staff and customers to the supplier's own specialists, can also ask technical questions, such as whether two oils can be mixed, and get answers drawn only from a verified library of product data sheets, OEM guidance and the supplier's own procedures, citing the document, section and page. No source = no answer.

If one of the supplier's specialists disagrees with an answer, they can feed back a correction. Each correction is peer-reviewed before it is accepted, so an error can't quietly find its way into the source material. If adverse results keep recurring, a case can be raised to investigate. Links to the customer's maintenance system mean an accepted report can become a work order, with ownership and follow-up tied to the same piece of equipment.

GOING DEEPER

Retrieval-augmented technical Q&A over a verified document library, with document, section and page citations and no answer without a source; an SME feedback loop, with peer review before any correction enters the knowledge base; recurring adverse results can raise investigation cases; and maintenance-system integration interfaces turn accepted reports into work orders.

04

Link technical service with the commercial conversation

The supplier can see sampling coverage, recurring problems and each customer's history in one place. The system can flag when a customer may need a service visit, or when there's a genuine sales opportunity. Importantly, the commercial rules only read the technical findings; they never rewrite them. The engineering judgement stays independent of the supplier's commercial response. Collectively, these features enable a step-change in targeted customer relationship management.

GOING DEEPER

Event-driven signals surface service needs and opportunities; a separate commercial rule layer consumes diagnostic outcomes without altering them, preserving diagnostic integrity.

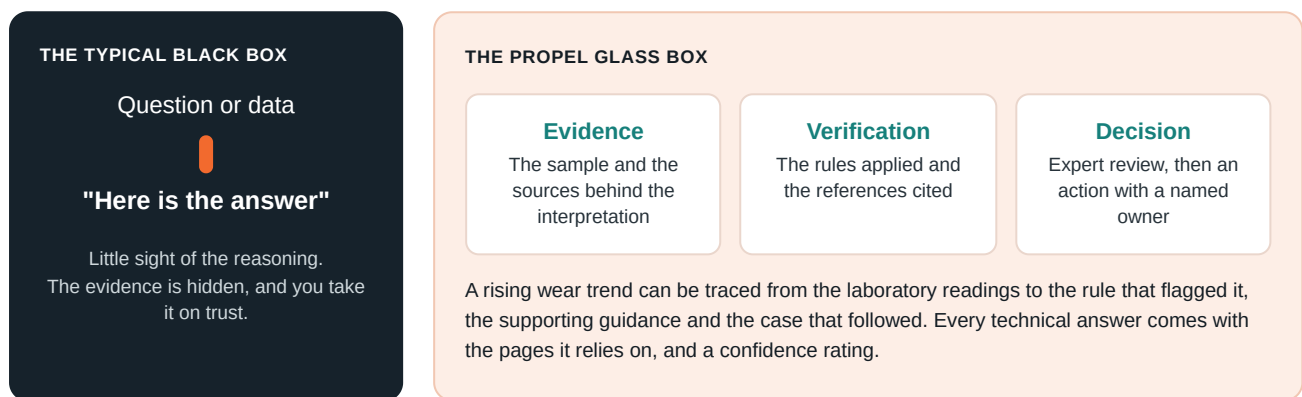
Built around one shared record

Laboratory, courier and maintenance systems connect through interfaces that can be replaced as needs change. Access is limited by customer and by role. The design lets the workflow fit around existing systems, although each outside connection needs to be set up and tested in its own right.

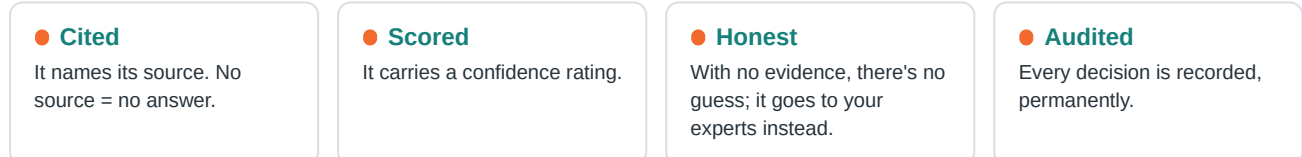
TECHNOLOGY AND TRUST

Black box or glass box?

Propel takes a glass-box approach to AI. Behind every interpretation, users can see the measurements, the technical references, the checks that were run and the review decision. A black box stops at "this is the answer". Here, the reasoning is on show, so an engineer can question the interpretation and act with the full picture.



AI that can say "I don't know" is AI you can put in front of a customer. So every answer is:



THE TECHNOLOGY, IN PLAIN TERMS

WHAT IT DOES, AND WHAT IT LETS YOU SEE

Joined-up data

Connected data and events

A single model of equipment and samples links laboratory results, kit movements, case history and the screens each person sees. Connections to outside providers are kept separate, so one can be changed without disturbing the rest.

Fixed engineering rules

Deterministic domain rules

Clear, fixed rules assess each measurement and trend, keeping the units, methods and supporting findings in full view. A separate set of commercial rules reads the outcomes to deliver an enhanced customer experience and minimise contract admin.

AI that shows its sources

Grounded AI and learned retrieval

The system searches technical material by meaning as well as by keyword, ranks what is most relevant and checks its sources. The references always remain available to inspect.

Governance built in

Governance by design

Each customer's data is kept isolated and secure, and is never shared with competitors. Each person sees only what their role requires.

Note: the glass box shows the evidence and controls behind each decision; it doesn't claim that every internal step of an AI model can be explained. A correct reference still needs a sound interpretation, which is why engineering expertise remains at the heart of the system.



THE USER EXPERIENCE

A shared view across the lubricant lifecycle

Everyone involved has different needs: Field staff need to know which sample is next. Lubricant Subject Matter Experts need visibility to anything out of the ordinary. Customers need to know the condition of their equipment and what to do about it. Account teams need to know how to exceed customer expectations. Viscorai connects all of these views through the same equipment, samples and cases, and uses trends and work queues to bring the right items to each person's attention.

The lubricant service, connected end to end

ILLUSTRATIVE WORKFLOW / ONE SHARED RECORD OF EQUIPMENT, SAMPLES AND CASES

01 FIELD**Equipment and sampling point**

QR capture and sample details

02 LOGISTICS**Kit and courier history**

Collection, transit and arrival at the lab

03 INTERPRETATION**Results with evidence**

Rules, references and review

04 CUSTOMER ACTION**Report and equipment trend**

Case or maintenance follow-up

05 SUPPLIER SERVICE**Repeat issues and needs**

Technical and commercial review

06 FEEDBACK**Follow-through on record**

History, ownership and the next sample

This shows how information is connected; no customer data or measured results are shown.

Field and logistics

Find the right sampling point, record the context and follow the kit. QR codes and status history make traceability part of the job, and the programme owner can see at a glance when sampling is overdue.

Technical and customer

Look at trends, source references and the review queue. Move from a published report to a case or maintenance action, with the supporting evidence kept alongside the equipment.

Service and commercial

See repeat issues and follow-up needs across the whole customer relationship. Turn a technical problem into a service conversation with a named owner, or a well-founded sales opportunity.

Fleet insight and benchmarking

Dashboards turn thousands of individual results into fleet-level insight: which equipment is trending towards trouble and how well each site is keeping up with its sampling programme. Benchmarking puts every result in context, with a different view for each side:

The customer

Can compare equipment across its own fleet, and against anonymised equipment running similar duty across the whole oil analysis programme.

The supplier or service provider

Can benchmark equipment in the same way, and also see how its lubricants perform across equipment types, geographies and end users. It decides how much of that wider picture to share with its customers.

GOING DEEPER

Fleet dashboards with asset-trend analysis and site-level sampling compliance; customer views with internal fleet benchmarking and anonymised programme-wide benchmarking by duty; supplier views adding lubricant performance by equipment, geography and end user, with discretionary sharing within the same customer and role-based access controls.

BUSINESS VALUE AND INDUSTRIAL RELEVANCE

Value across the lubricant programme

Propel brought together the workflow, the data foundation, the AI interpretation, the governance and the apps for each role. The value is shared across the whole programme: the customer running the equipment, the lubricant supplier or service provider behind it, and the laboratory that tests each sample.

FOR THE CUSTOMER

- **A clear view of fleet health.**

See at a glance where attention is needed across the fleet, and how equipment compares with others running similar duty.

- **Early intervention, less downtime.**

Spotting a degrading lubricant early can prevent a costly escalation into equipment damage, helping to reduce unplanned downtime and extend equipment life.

- **Expert answers on demand.**

Technical questions get a referenced answer straight away, rather than waiting for a call back.

- **Evidence when it matters.**

A permanent record of every sample and decision supports warranty claims, insurance, audits and compliance.

- **Paperwork that takes care of itself.**

Smart contracts mean charges follow the work, on the agreed terms.

- **Lubricant changes at the right time.**

Changing lubricants when the evidence says so, rather than by the calendar, avoids both premature changes and running too long.

- **Faster, more consistent reports.**

Commentary is drafted in seconds rather than days, and reads the same whichever analyst is on shift.

- **A better customer care experience.**

Reports, trends, answers and follow-up all sit in one place, with a named owner for every action.

- **Less waste.**

Changing lubricants only when needed means less oil used and less waste to dispose of, which also helps the environment.



BUSINESS VALUE AND INDUSTRIAL RELEVANCE

FOR THE LUBRICANT SUPPLIER OR SERVICE PROVIDER

- **A differentiated used oil analysis programme.**

Consistent, referenced commentary, fleet insight and technical answers set the programme apart from a standard laboratory report.

- **Specialists freed for higher-value work.**

With routine commentary handled, scarce technical experts can focus on the difficult cases and on complementary, value-adding services such as on-site lubrication system flushing.

- **More timely, targeted customer relationships.**

Account teams see recurring problems and unresolved needs as they arise, so conversations are well-timed and relevant.

- **Long-term customer loyalty.**

When customers rely on the dashboards, history and technical answers every day, the programme becomes part of how they run their operation.

- **Smart contracts, faster payment.**

Charges are raised automatically, with proof attached, reducing delays and disputes.

- **Expert knowledge, captured and scaled.**

Senior engineers' judgement is built into the rules and guidance, so the programme can grow without adding headcount.

- **Oversight matched to the level of service.**

Different levels of expert oversight can be offered at different price points, with full supervision as the premium option.

- **Trusted, evidence-led recommendations.**

Service and product recommendations follow the evidence, while the diagnosis stays independent, so customers can trust the advice.

- **Insight into product performance.**

Real-world evidence of how its lubricants perform supports product development and marketing.

FOR THE TESTING LABORATORY

Consistent commentary at volume. Expert-quality commentary that customers can rely on, however many samples arrive.

Billing on receipt. The laboratory scan confirms the sample has arrived and can trigger the agreed charge to the supplier or service provider automatically.

Beyond lubricants

The same approach can be applied to industrial condition monitoring more widely: connecting what is observed, how engineers interpret it, the maintenance that follows and the service delivered. The value grows when insight stays attached to the equipment, the person responsible and the next decision.

Getting started. Viscorai™ is live and commercially available. Propel's Northstar Framework® starts by agreeing the value to be delivered, then builds with the people who will use the system: a first working system typically within one to two weeks, and measurable value within four to eight.

Engineering case study, September 2026. Viscorai™ is live and commercially available. The customer's identity has been withheld. The benefits described are what the system is designed to deliver; no measured results are reported here. thepropelgroup.com