



OPERATIONAL KNOWLEDGE / ENGINEERING CASE STUDY

Corporate Knowledge At Sea

Empowering your crews when they need it most

When a crew member needs a procedure, the answer is usually somewhere in the ship's manuals. Finding it, and being sure it is the right one, is harder, especially mid-ocean with limited internet connectivity. The Propel Group built Full Fathom AI so that crew can ask a question in plain English and get an answer taken from their own approved documents, with the source shown alongside it, whether or not the ship is connected.

GOING DEEPER

An offline crew assistant that runs entirely on the vessel, combining search, relevance ranking, AI-drafted answers and explicit citation and evidence checks.

THE VALUE CASE AT A GLANCE

The problem

Crews cannot always find the right procedure when they need it, or be sure it is current, particularly at sea without a connection.

The value

Quicker, safer decisions on board, procedures followed as written, and fewer calls to the office.

Extra value, at little or no extra cost

The record of questions asked shows where the manuals are missing information or unclear. New crew members have an easy way to learn the ship's procedures. Every answer is logged, which helps with audits and inspections.

Why Propel

We combine practical experience of the maritime sector with the software skills to make AI reliable enough to use on board, and we show how every answer was reached.



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

Finding the page is only half the job

A ship's knowledge is spread across the safety management system, fleet procedures, regulations and equipment manuals. Finding a passage is only the start. The crew member also needs to know whether it applies to this vessel and this situation, where it came from, and when the manuals do not cover the question at all.

Full Fathom AI is designed with that in mind. It gives the crew member the information and its source, and leaves the decision with the people responsible for it.



THE APPROACH

How it works

The documents are prepared ashore; the questions are answered on board.

THE OPERATIONAL THREAD

**Prepare**

Approved documents

**Load**

On to the vessel

**Answer**

With the source

**Improve**

Fill the gaps

01

Prepare the ship's library ashore

The vessel's approved documents are prepared ashore and packaged into a single knowledge pack, with a version number. The structure of each document is kept, so a procedure's steps, its tables and the sections around it stay together. When a question is asked on board, the answer comes only from that pack.

GOING DEEPER

Documents are processed ashore into a versioned, deployable bundle that preserves document structure; the onboard runtime answers only from the local bundle.

02

Find the passage that answers the question

Full Fathom AI searches by meaning as well as by exact wording, so it finds the right passage whether the crew member uses the manual's terms or their own. Sources are ranked in order of authority: the vessel's own safety management system first, then fleet procedures, then regulations, then reference material. Mandatory procedures, such as man overboard, are returned in full and in the correct order.

GOING DEEPER

Semantic and keyword search provide complementary signals; a neural reranker scores relevance, and document authority influences ordering.

03

Answer only what the documents support

Every answer gives its sources, and each reference is checked against the passage it points to. A separate check confirms whether the passages found are enough to answer the question. Each answer is rated High, Medium or Low confidence, with the reason. If the manuals do not cover the question, Full Fathom AI says so rather than guessing.

GOING DEEPER

Cited answer generation, citation validation and a separate context-sufficiency assessment, surfaced as confidence ratings and warnings.

04

Works at sea; updated in port

Everything runs on the vessel's own computers, so no connection is needed to ask a question, and the ship's data stays on the ship. Updated knowledge packs are loaded at port calls and checked to confirm they have not been altered. Keeping the manuals up to date is therefore kept separate from answering questions. Anything shared with the office follows the operator's own rules, and no personal details of crew members are kept in the question log.

GOING DEEPER

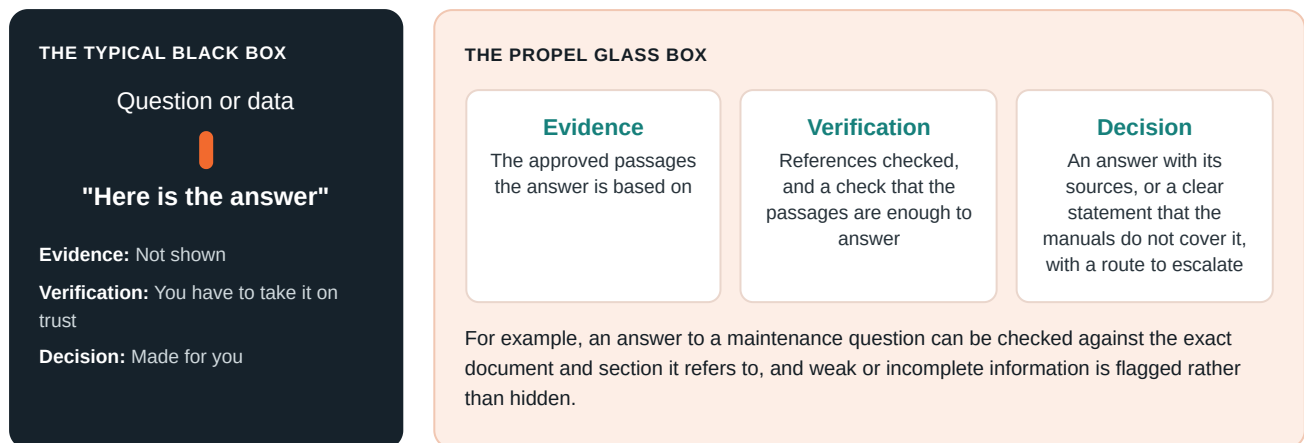
Local inference on standard vessel hardware; versioned bundles with checksum verification; shore-side analytics subject to the operator's data-sharing settings.



TECHNOLOGY AND TRUST

Black box or glass box?

With a black box system, the crew member has to accept an answer without being able to check it. Full Fathom AI shows where every answer comes from: the passage, the document version, the confidence rating and the checks that were carried out. Checking the source becomes part of asking the question.



THE TECHNOLOGY, IN PLAIN TERMS

WHAT IT DOES

Search

Hybrid retrieval and learned ranking

Understands the meaning of a question while respecting exact technical terms, then puts the most relevant and most authoritative passage first.

Answers with sources

Evidence-aware generation

The AI writes only from the passages it has found. Separate checks confirm that each reference is genuine and that the passages are enough to answer.

Works offline

Local runtime and versioned knowledge

Everything runs on board. Knowledge packs have version numbers and are checked when loaded, so updating the manuals never interferes with answering questions.

A full record

Traceability and feedback

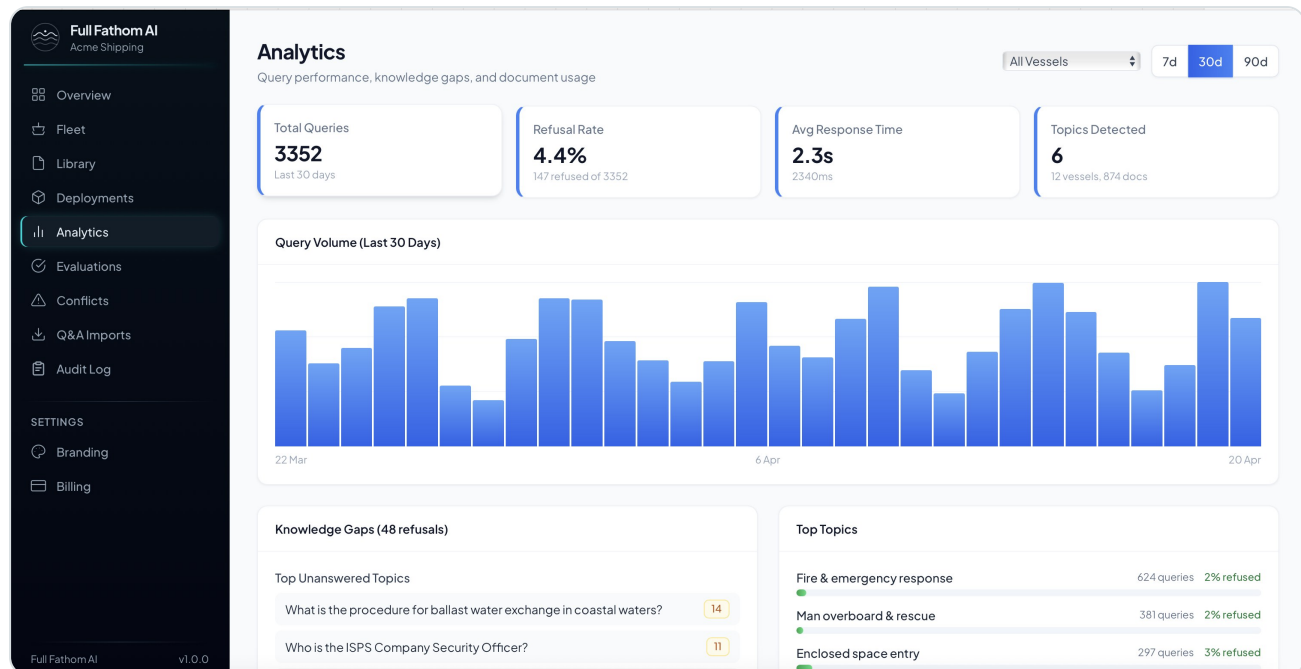
Each answer records what was found, what was checked, the confidence rating and the knowledge version used. The office can see recurring gaps, subject to the operator's rules on sharing.

Note: the glass box shows which sources were used and which checks were carried out; it does not reveal the detail of how Propel's search is tuned. A correct reference still needs to be read correctly, and confidence ratings support approved procedures and human judgement; they never replace them.

THE USER EXPERIENCE

What the crew and the office each see

For the crew member, asking a question is the natural starting point. For the fleet manager, the pattern across all the questions asked is more useful. Full Fathom AI provides both.



Full Fathom AI dashboard from product material. "Acme Shipping" and the figures shown are sample data, not customer results.

Crew member

The answer is shown alongside its source and any uncertainty, so checking it is part of reading it, not a separate search afterwards.

DPA and HSEQ team

Every question, source, check and knowledge version is recorded, which supports audits and reviews under the ISM Code.

Fleet manager

The number of questions from each vessel, and the topics crews could not find answers to, show exactly where the documentation needs work.

A genuine reference is not always a correct answer.

A reference can point to a real passage while the answer still misreads it. That is why reference checks, completeness checks and expert review each have a role, and why confidence ratings support judgement rather than overriding approved procedures.

JOINING THE DOTS

As shore power becomes normal practice, the information Full Fathom AI already holds on board becomes useful to ports as well: the vessel's electrical load data, the ratings of equipment that runs alongside, such as cargo and ballast pumps and compressors, and the shore-connection procedure itself. It helps crews connect safely and, if the operator agrees to share it, helps ports plan the power they will need. Together with a reliable voyage record from voyageGRAPH™ (Case Study 03), a port can see when a ship will arrive, how long it will stay and roughly how much power it will draw (see Use Case 08).



BUSINESS VALUE AND INDUSTRIAL RELEVANCE

The value on board and ashore

Propel connected the preparation of documents, the search and answers on board, the checks on each answer and the management of the knowledge ashore. Approved procedures become easier to use on board, and easier to improve as recurring questions show where the gaps are.

FOR CREWS

- **Answers in seconds.**

The relevant passage and its source arrive together, instead of a search through binders.

- **A clear "not covered".**

Questions the manuals cannot answer are passed to a specialist, rather than given an answer that sounds plausible but may be wrong.

- **No connection needed.**

Everything runs on board, so crews on remote and offshore voyages keep access to their manuals.

FOR THE FLEET AND HSEQ TEAMS

- **A record for every answer.**

Sources, versions and checks are recorded, supporting ISM audits and incident investigations.

- **Consistency across the fleet.**

Every vessel answers from the same approved, version-controlled documents.

- **A list of what needs fixing.**

Unanswered and recurring questions form a list of documentation to update, and asking the question again shows whether an update has worked.

Beyond the vessel

The same approach suits remote industrial sites and any operation where maintenance information must be controlled. Each site needs its own rules on which documents take priority, approved content, a set of test questions and an agreed way of installing and running the system. The aim is the same: reliable information where the work is done.

GETTING STARTED

Full Fathom AI is available now, with a two-month trial on two vessels. For fleets with particular requirements, Propel's Northstar Framework® starts by agreeing the value to be delivered, then builds the system with the crews who will use it. A first working system typically takes one to two weeks, and measurable value four to eight.

Engineering case study, September 2026. Full Fathom AI is available now. The benefits described are what the system is designed to deliver; no measured results are reported here. fullfathom.ai · thepropelgroup.com