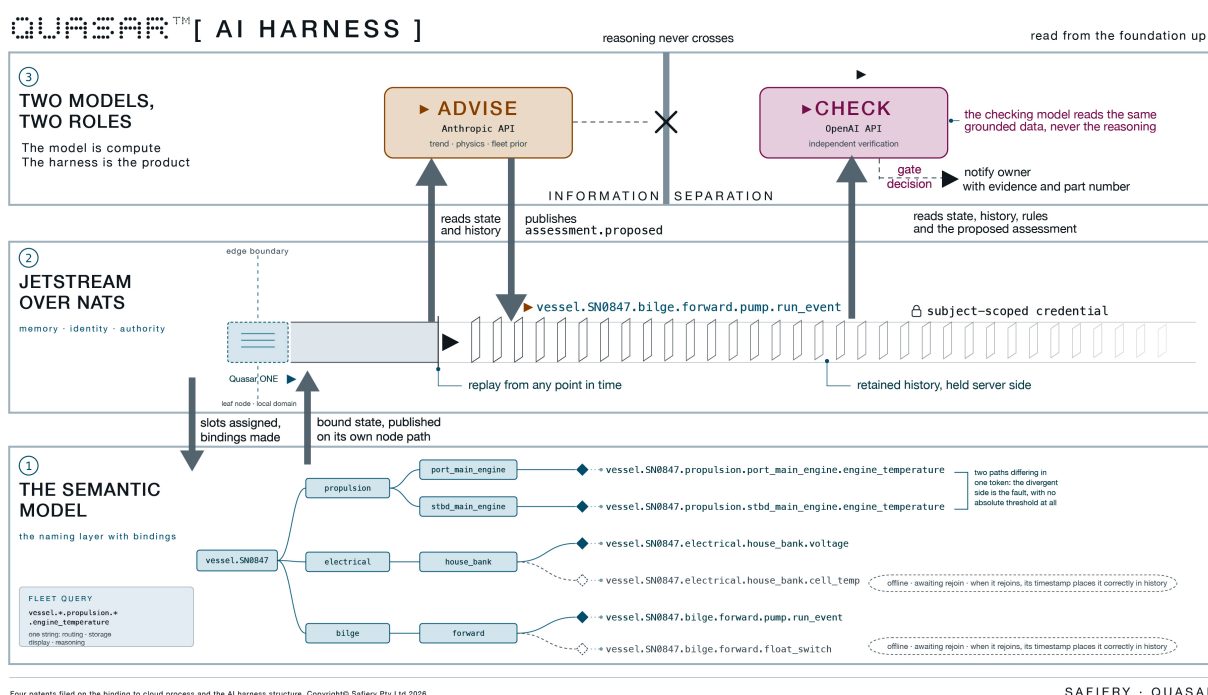


An AI model is only compute.

Quasar's 3-layer AI harness is the product.

Every boat on the market may brag about having an AI model in the dashboard.

Quasar is the structure around AI models: a named vessel, every reading since commissioning, a second model that checks the first, and hardware that has the final say.



SAFIERY · QUASAR

A model on its own knows nothing about your boat. It cannot read a tank sensor, remember last month's bilge cycles or compare a hull with its sisters. Everything that makes it useful sits around it: the model of the vessel, the memory, the record of what it did and the limits on what it may do. That structure is the AI harness, and it is what Safiery builds.

One name, from the sensor to the advice. Every device, signal and space is bound to a durable node path such as vessel.SN0847.bilge.forward.pump.run_event. The same string is the message subject, the storage key, the display binding and the term the AI reasons about. No mapping table, so nothing can drift out of step.

History is infrastructure, not a feature. Telemetry runs on JetStream over NATS, which keeps the history of every signal on the server. An assessment replays over the past month rather than querying a snapshot. With the link down the boat keeps recording locally, and when it returns the backlog of data joins the history with its original timestamps intact.

Two vendors, so a mistake is not inherited. Anthropic proposes. OpenAI checks anything that would reach the owner, reading the same boat data and Safiery's rules but never the first model's reasoning. Two instances of one model share the same blind spots, so a check from the same vendor is a risk.

The boat has the final say. Lights, fridges and pumps can be switched remotely. HVAC is a request the boat sequences itself. Gensets and watermakers have no command path at all, so there is nothing for a model to get wrong. The AI proposes. The boat decides.

3

LAYERS OF
HARNESS

1

NAME: PATH,
SUBJECT, KEY

15 min

BETWEEN CHECKS

2

MODEL VENDORS

0

REMOTE GENSET
STARTS

20 yr

ASSET LIFE,
NAMED ONCE

One name, one history.

The power of the harness is in Fast assessment - accurately.

A thousand boats reporting every fifteen minutes is about 148 million pieces of data a month. With a semantic model, that is a fleet under watch. It adds a layer of assist to monitoring by yourself. Unlabelled, it is noise no amount of compute will be able to assess.



THE SEMANTIC MODEL

Every device, signal and space gets a durable identity and a place in a hierarchy of the vessel. The node path is the key everything else uses.

- A CAN address is re-claimed on the next power cycle. A device name is whatever the yard typed. The path survives both.
- The path carries the physics, so coolant is judged against load rather than against a fixed line.
- Port and starboard differ by one token, so the divergent side is the fault with no threshold at all.
- Swap a component and the path stays. The binding changes and the baseline resets, so history is marked rather than lost.

JETSTREAM OVER NATS

The transport holds the memory, so there is no separate database to keep in step.

- History per subject, replayable from any point in time.
- A durable cursor per agent, so a restart misses nothing and counts nothing twice.
- A leaf node on the boat keeps recording with the link down and backfills in order.
- Last value and full history live on the same key, for the phone and the agent alike.

WHAT THE HARNESS NEEDS, AND WHERE MQTT STOPS

MQTT is a delivery protocol, and a harness needs three things: 1.a history 2. identity protocol and 3. Message delivery protocol.

AI HARNESS NEEDS	JETSTREAM OVER NATS	MQTT AS IT STANDS
Address space	Subjects are the node path, with wildcards	Topics do the same. MQTT is strong here
History	Held per subject on the server, replayable	One retained value per topic. Add a historian
Cursors	Durable per consumer, survives a restart	No replay from an arbitrary time. Track offsets yourself
Offline boat	Leaf node backfills with original time and order	A bridge republishes. Timestamps become arrival times
Current value	Same key as the history	Retained value, on the same topic
Authorisation	Per credential, per subject, checked by the server	Broker specific access lists, outside the standard
Command reply	Request and reply with a timeout, built in	Expressible in MQTT 5, assembled by hand



AUTOMATICALLY CREATES VESSEL LOG

A side benefit, but an important one, is a vessel log time stamped is created simultaneously. Even if the vessel is out of range for some time, when reconnected to the internet, the log updates with the correct time stamps. Additional local memory may be required. After first year, vessel log requires subscription.

TWO MODELS, TWO ROLES

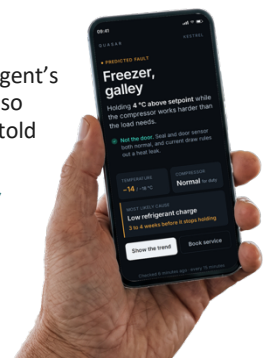
Advise. Anthropic. Trends each signal against its own history, then against the physics of the component, then against sister vessels. Publishes a proposed assessment.

Check. OpenAI. Reads the same history and Safiery's rule library, never the first model's reasoning, and either agrees or lists the exceptions. Nothing reaches the owner unless it passes.

The separation is a credential, not a convention. The checking agent is not permitted to subscribe to the working agent's thinking. There is a physical separation, so the boundary holds even if the agent is told otherwise.

THE EDGE OWNS AUTHORITY

Rules are written against classes of device, because a rule per device is a rule someone forgets to write for the next one.



Lights, fridges, pumps	Switched remotely, through the harness
HVAC plant	Request only. The boat sequences it
Gensets, watermakers	No command subject exists

The AI advises, proposes. The boat decides and notifies.