Using agentic systems in maritime

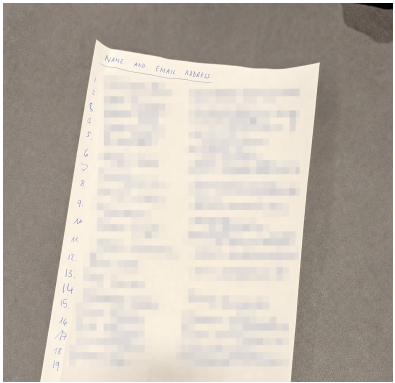
to connect fragmented data

Antorweep Chakravorty

Professor of Computer Science, University of Stavanger

2nd People Tech Maritime Bergen · 22 October 2026

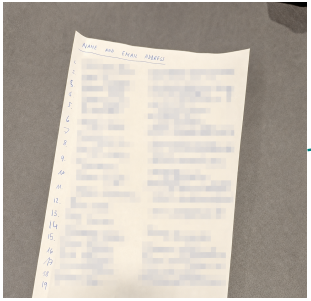
One request. Twenty-four rows.



a round-table sign-up sheet (anonymised)

UNDER THE HOOD unstructured input · structured output

One request. Twenty-four rows.



a round-table sign-up sheet (anonymised)

“convert and give me as an excel sheet”

No.	Name	E-mail

24 structured rows

One request. A few minutes later, a spreadsheet.
What happened in between?

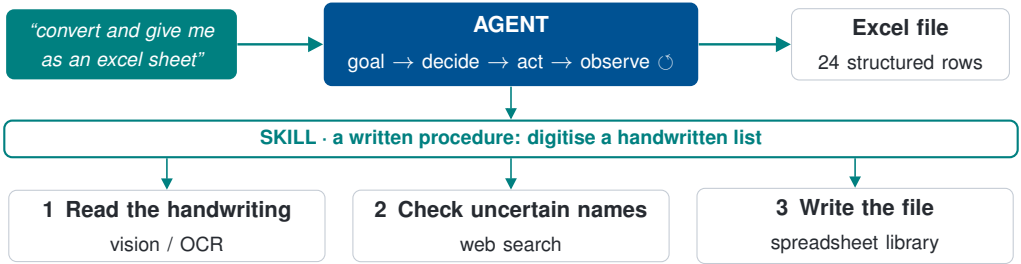
Behind the result: an agent at work



A goal goes in. The agent loops until the result is done.

UNDER THE HOOD goal-driven control loop · tool use · the language model as a decision policy

Behind the result: an agent at work

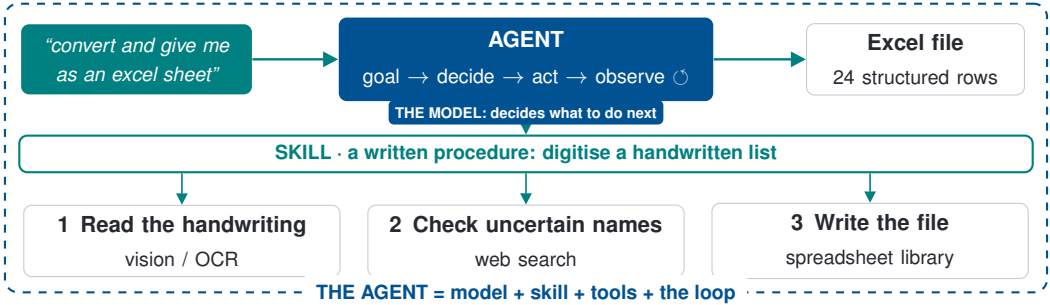


TOOLS DO THE WORK

One agent: a goal, a skill, three tools.

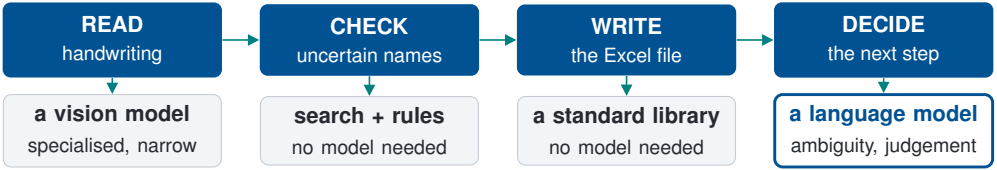
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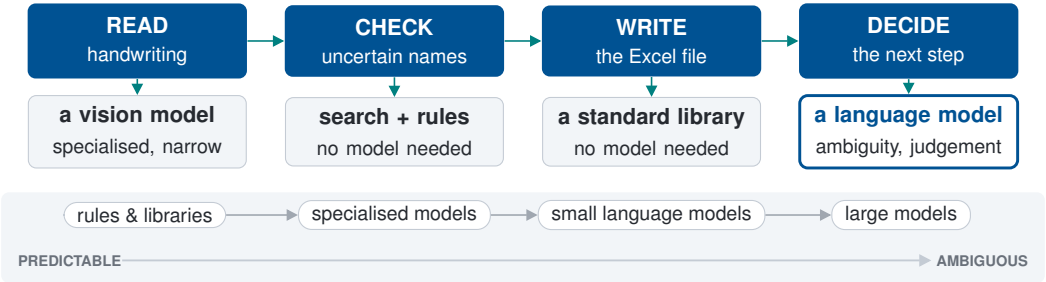
The model is not the agent. It is one part of it.

Did every step need a large language model?



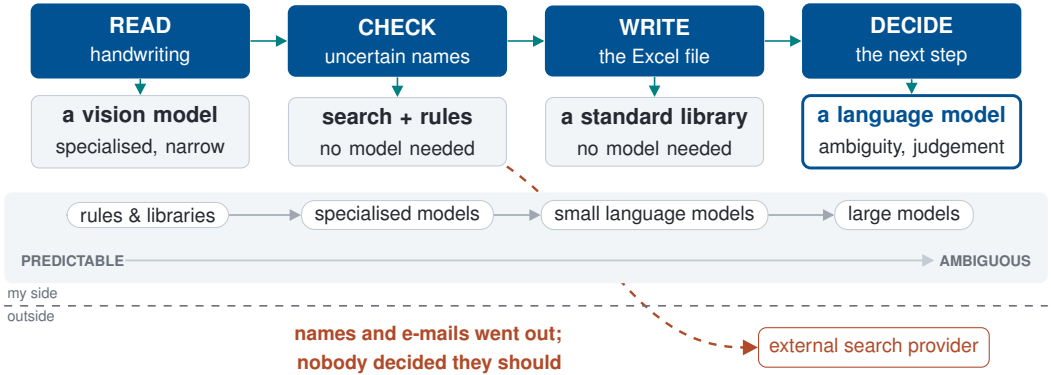
Most steps needed specialised tools, not a large language model.

Did every step need a large language model?



Use the smallest sufficient intelligence for each step.

Did every step need a large language model?



Ask what an agent can reach, and what leaves.

From one sheet to a fleet

“Shipping’s AI challenge is no longer artificial intelligence. It’s data.”

Lloyd’s List headline, 3 September 2026

Lloyd’s List, 3 Sep 2026 · scenario illustrative

UNDER THE HOOD data integration · heterogeneous schemas

From one sheet to a fleet

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FRAGMENTED

ON BOARD	ASHORE
Alarm & monitoring	Planned maintenance
Manuals & job cards	Spares & purchasing
five systems, five logins, one slow link	Voyage plan

Lloyd’s List, 3 Sep 2026 · scenario illustrative

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NOT STANDARDISED

VESSEL A	`AE2_RUN_HRS`
VESSEL B	`DG2.RunHours`
VESSEL C	`GEN2 RUNNING HRS`

one counter, three sister vessels, three names

language models can propose the mapping, and a person approves it (beyond the scope of this talk)

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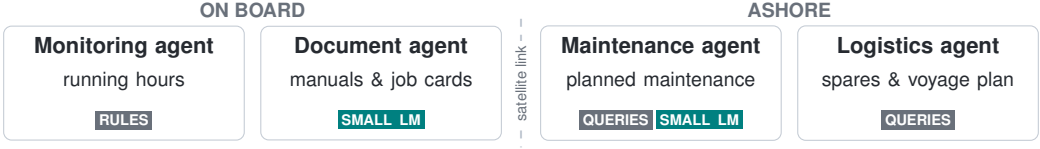
Can we do the AE2 overhaul in Rotterdam, and is everything ready?

a routine job: generator 2 is coming up to its scheduled overhaul, nine days from Rotterdam

The data exists. The connection doesn’t.

Lloyd’s List, 3 Sep 2026 · scenario illustrative

Agents, organised like a crew



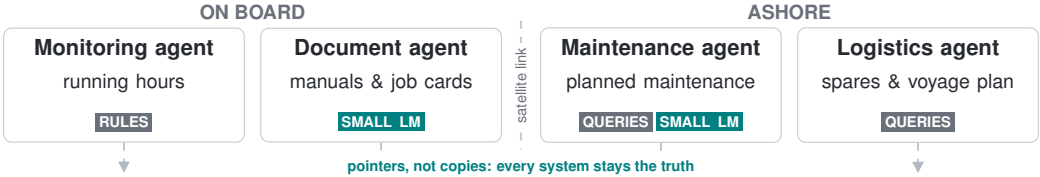
each agent sits next to the system it reads · two of the four use no language model at all

Specialists next to their data, each with the smallest sufficient intelligence.

Scenario illustrative

UNDER THE HOOD multi-agent systems · event-driven flow · knowledge graph · provenance

Agents, organised like a crew

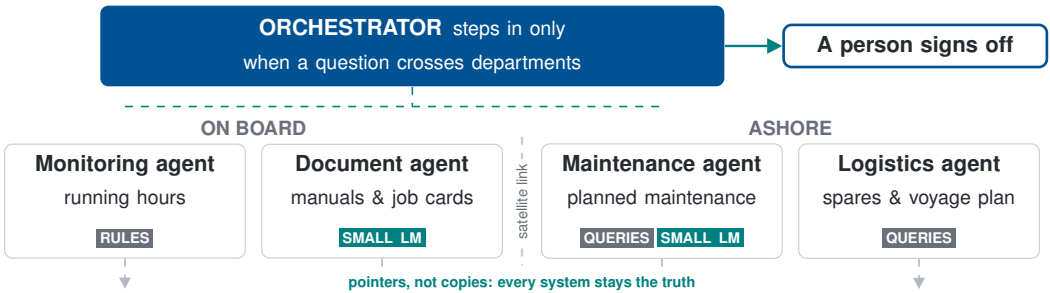


A chart of what exists. A logbook of what happened. No new data lake.

Scenario illustrative

UNDER THE HOOD multi-agent systems · event-driven flow · knowledge graph · provenance

Agents, organised like a crew



A crew of multi-agent system.

Scenario illustrative

UNDER THE HOOD multi-agent systems · event-driven flow · knowledge graph · provenance

Coordination, not just search

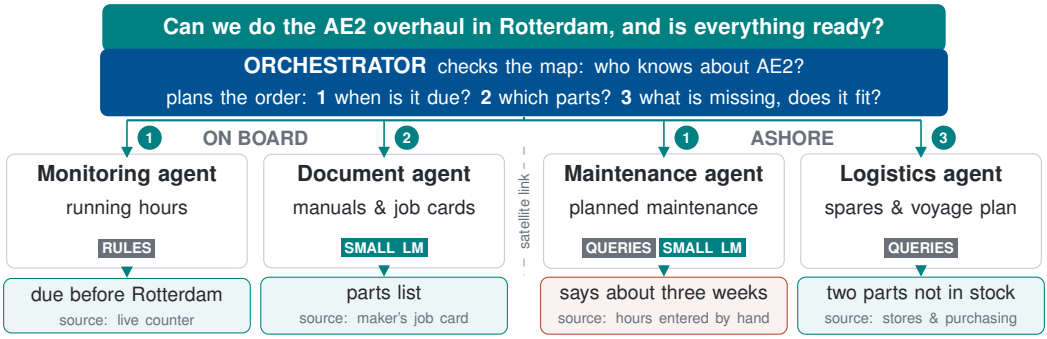


each answer feeds the next: coordination, not just search

Scenario illustrative

UNDER THE HOOD planning with dependencies · cited results · conflict detection · human approval

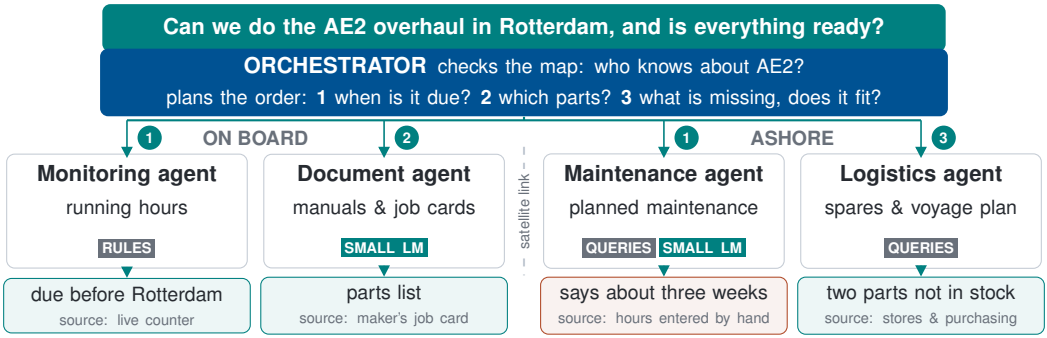
Coordination, not just search



Scenario illustrative

UNDER THE HOOD planning with dependencies · cited results · conflict detection · human approval

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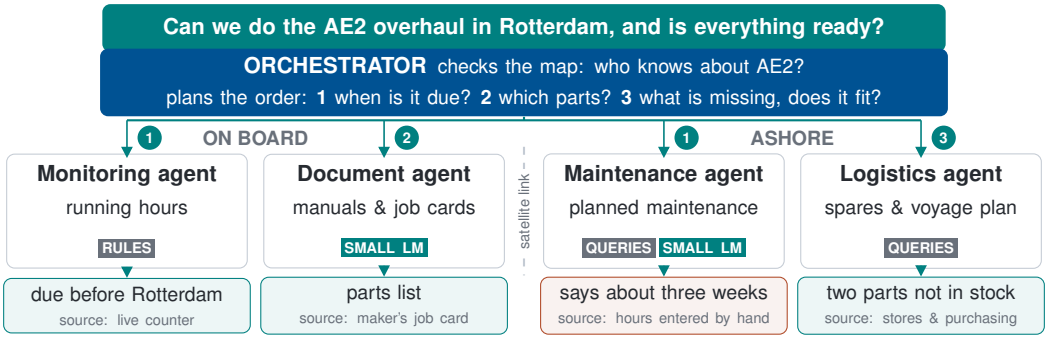
two sources disagree: use the live counter, and ask a person to confirm

one part can't arrive in time: same part found under a newer part number; next port as fallback; ask

Scenario illustrative

UNDER THE HOOD planning with dependencies · cited results · conflict detection · human approval

Coordination, not just search



The question travels. The data stays. The experts decide.

Scenario illustrative

UNDER THE HOOD planning with dependencies · cited results · conflict detection · human approval

Where it runs: ship and shore

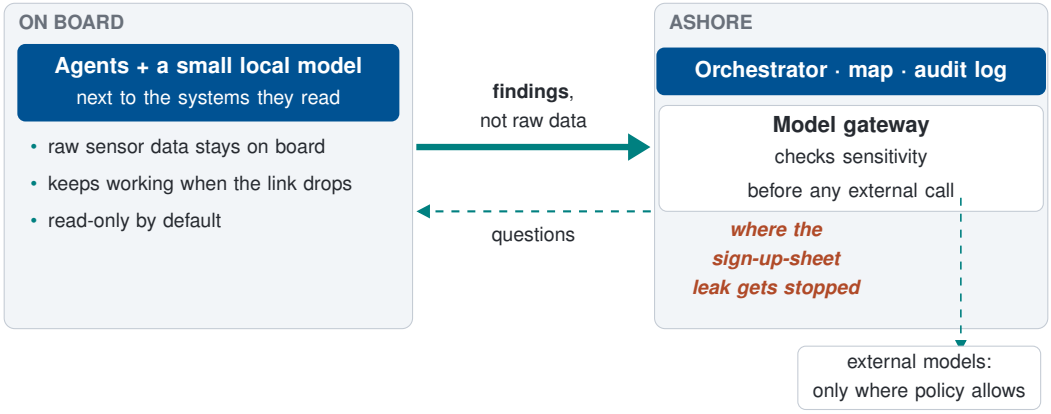
ON BOARD

Agents + a small local model
next to the systems they read

- raw sensor data stays on board
- keeps working when the link drops
- read-only by default

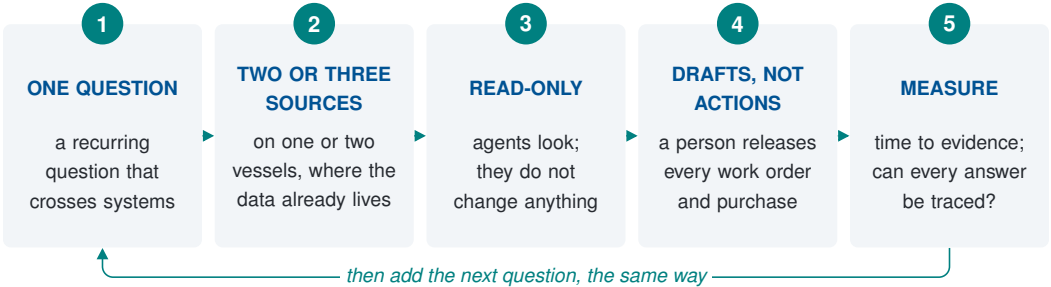
UNDER THE HOOD edge computing · store-and-forward · least privilege · policy gateway

Where it runs: ship and shore



UNDER THE HOOD edge computing · store-and-forward · least privilege · policy gateway

How to get there: start small



Not a large scale integration. A sequence of approved, reversible steps.

UNDER THE HOOD incremental rollout · least privilege · evaluation

What works, what is emerging, what is not yet

WORKS TODAY

- Agents inside one product and one domain (e.g. voyage optimisation)
- Document extraction and summaries
- Answers over manuals, with sources
- Drafts for a person to sign off

Thetius & Marcura, *Beyond the Hype* (Aug 2025, 130+ respondents) · Gartner, 25 Jun 2025 · ZeroNorth, 4 Aug 2026

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- Systems proposing their own setup and data mappings
- Exploratory agents surfacing patterns: hypotheses, not facts

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NOT YET

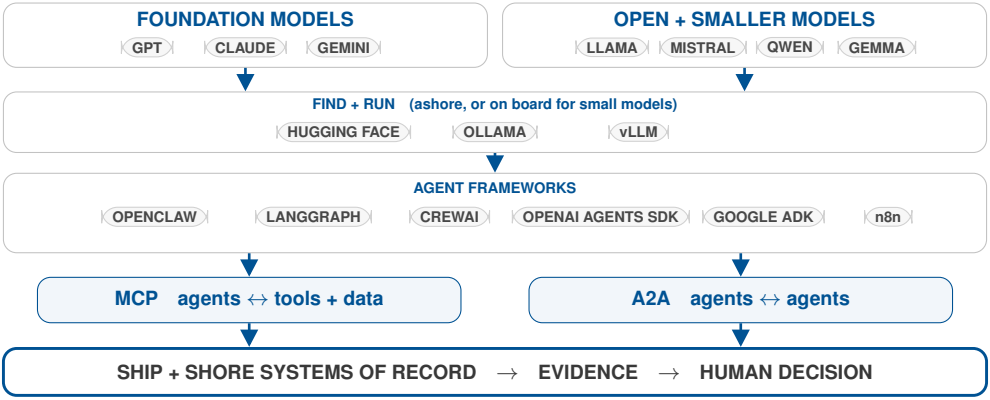
- Unsupervised action on safety-critical equipment
- Trusting an output with no record of where it came from

81% of maritime organisations are piloting AI;
11% have policies to scale it beyond the pilot

Gartner: over 40% of agentic AI projects cancelled by the end of 2027

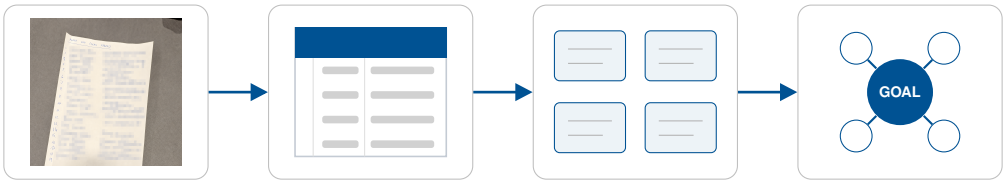
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What's underneath: the stack, October 2026



Representative, not exhaustive · examples, not endorsements · MCP, A2A: Linux Foundation

Back to the sheet of paper



A PHOTOGRAPH
one source

A SPREADSHEET
one agent

SHIP + SHORE
many systems

A TEAM OF AGENTS
coordinated evidence

It looked like data entry. It was a goal, tools, a boundary and a decision.

A fleet asks the same questions, at scale.

Five questions for any agentic proposal

1. Where does my data go, and what leaves the ship?
2. What is the smallest sufficient intelligence for each step?
3. Who approves, and can I trace every answer afterwards?
4. Does it work across my vendors, through open interfaces?
5. What still works when the satellite link drops?

Thank you

antorweep.chakravorty@uis.no