

Applied AI in Transport Operations

My work on Java services, transport workflows and applied AI at Alpega



Gerry Walter

Senior Applied AI Engineer

Senior Full Stack / AI Engineer | April 2023 - October 2025

Software I worked on. Engineering knowledge I bring.
A personal portfolio of my contribution and experience.

Cover: AI-generated conceptual editorial illustration, not an application screenshot.

START HERE

Introduction and Contents

A compact case study for technical and stakeholder presentations.

I worked through DBot Software as a Senior Full Stack / AI Engineer on Alpega's transport platform. My contribution brought together Java/Spring Boot development, enterprise integration and applied AI in workflows used by drivers, consultants and transport teams.

I built capabilities for discovering service locations, guiding operational decisions and supporting bookings. I also designed a four-milestone Hybrid Search and RAG workflow that combined carrier position, shipment state, operational history and station capabilities. Alongside feature development, I worked on automated QA, regression testing, CI/CD and production stabilization.

Contents

01	What I Built at Alpega	3
02	How I Connected the Application	4
03	The Workflow I Designed	5
04	My Applied AI Engineering Approach	6
05	My Contribution and Its Impact	7
06	How I Delivered Dependable Software	8
07	Glossary and References	9
08	Closing Perspective	10

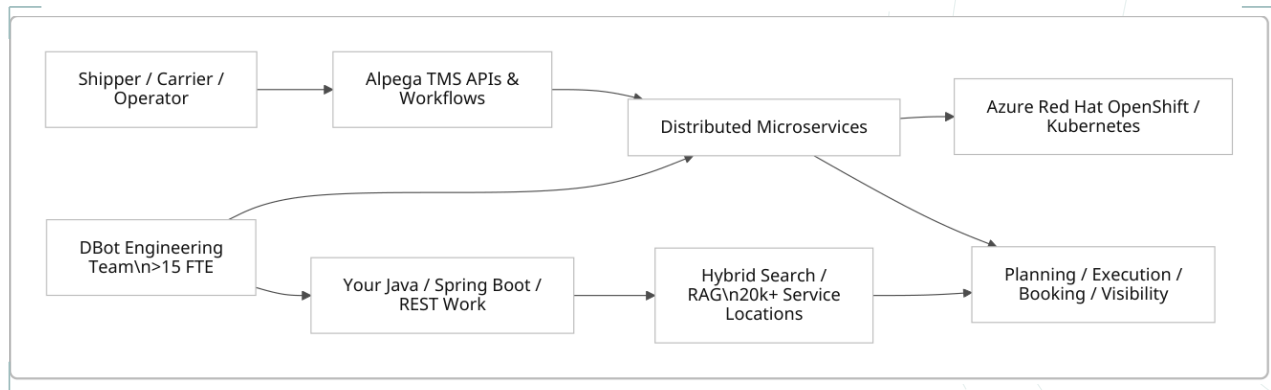
My engineering approach

My approach starts with the transport decision and follows it through the application: which information is needed, how services exchange it, how a recommendation becomes useful, and how the workflow behaves when something fails. The chapters show that connection between my software engineering work and its operational value.

CHAPTER 01

What I Built at Alpega

Hands-on software engineering across transport operations and intelligent discovery.



01 My work connected Java services, operational information and transport decision support within the DBot/Alpega engagement. Simplified project view.

Transport capabilities from end to end

I contributed to the architecture, development and stabilization of business-critical transport capabilities. My implementation work used Java, Spring Boot, REST APIs and enterprise integrations. I worked on the relationship between what users needed to accomplish and the service behavior required to support it, rather than treating the frontend, backend and integration as isolated tasks.

Discovery, guidance and booking

The workflows I developed supported drivers, consultants and transport teams in finding service locations and planning their next action. The scope covered more than 20,000 cleaning-station locations worldwide, including information relevant to EFTCO/EFTCI/ENFIT-related processes. Location alone was not enough: guidance also needed to account for timing, availability and the requirements of the transport process.

Applied AI in the operational flow

I designed a four-milestone Hybrid Search and RAG workflow combining carrier position, shipment state, operational history and station capabilities. I connected that context to shipment visibility and ranked recommendations for loading, unloading, reloading and cleaning. The engineering challenge was to make the information useful at the point where an operational decision had to be made.

Delivery beyond the feature

My work also covered automated QA, API and integration tests, regression prevention, CI/CD, documentation and controlled releases. I contributed to production stabilization as part of the wider DBot engagement. That combination reflects how I work as an engineer: implementation matters, but so do the contracts, tests and release process that keep a feature dependable.

CHAPTER 02

How I Connected the Application

Turning operational information into services and useful user-facing behavior.



02 My engineering scope: transport workflows, Java services, enterprise integration and Hybrid Search/RAG. Responsibility view, not a physical deployment map.

Java and Spring Boot development

I developed backend capabilities and enterprise integrations in Java and Spring Boot. This work required translating transport requirements into service behavior and REST interactions that the application could use consistently. The value of the backend was not simply returning data: it was supporting a meaningful next step in discovery, guidance or booking.

Understanding the business entities

Carrier position, shipment state, station capability and booking outcome describe different parts of the operation. My workflow design combined them without reducing the decision to a single location match. Understanding these relationships helped me connect technical implementation to questions that mattered to the transport team: where the shipment was, what it needed and which service option fitted.

Working in Alpega's environment

I contributed within a cloud-based transport-software environment where application behavior and integrations were business-critical. My focus was the software I helped develop and stabilize: its service boundaries, operational workflows and release quality. Working in that setting required attention to the effect a change in one part of the application could have on another.

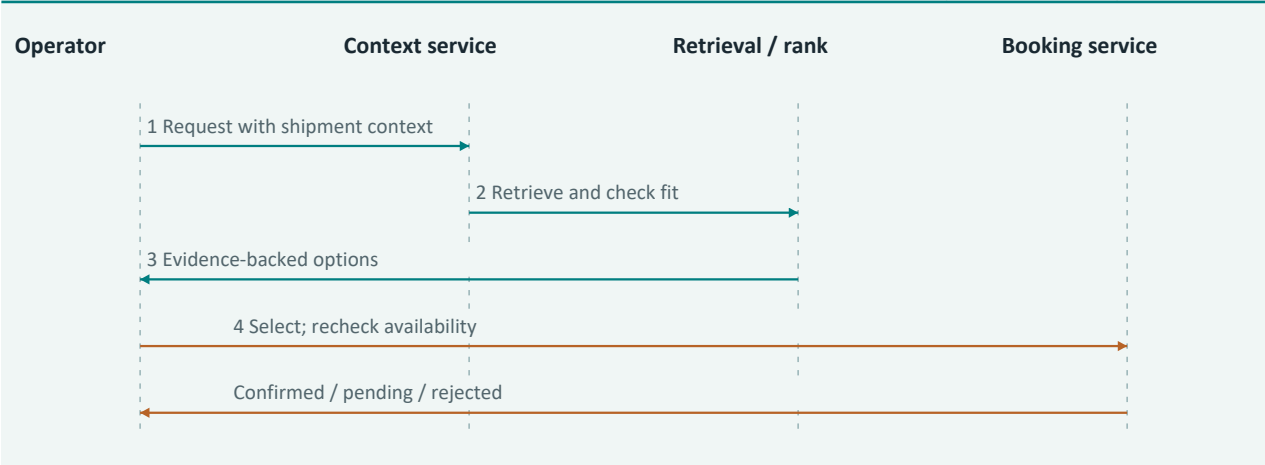
The knowledge I bring

I understand applied AI as part of a wider software architecture. Retrieval supplies relevant context; business services determine how the application uses it; the user needs an understandable result. My Alpega work combined those concerns with Java development and integration knowledge. This is the connection between my full-stack background and my applied AI engineering practice.

CHAPTER 03

The Workflow I Designed

From shipment context to a ranked operational recommendation.



03 Simplified walkthrough of my four-milestone Hybrid Search/RAG workflow and its connection to booking. Labels summarize responsibilities rather than internal endpoint names.

1. Bring the shipment into context

I designed the workflow around the carrier's position and shipment state, with operational history providing additional context. This made the recommendation relevant to the current transport situation. The starting question was practical: what does this shipment need next, and which facts are necessary to guide that decision?

2. Connect needs with capabilities

I brought station capabilities into the discovery process and used location, timing, availability and process fit as ranking considerations. That moved the workflow beyond a directory of nearby places. It connected the transport requirement to the service information needed to identify a useful loading, unloading, reloading or cleaning option.

3. Make the recommendation useful

I connected the four milestones to real-time shipment visibility and ranked guidance. The goal was to help drivers and transport teams act on operational information rather than assemble it manually across disconnected views. For me, the quality of a recommendation depends on its fit to the task, not just how plausible its explanation sounds.

4. Link guidance to the next action

My application work included booking as well as discovery and guidance. I see these as connected responsibilities: a shortlist helps the user choose, while the booking workflow has to communicate what actually happened. The sequence illustrates this distinction and the relationship between the intelligent recommendation and the business action it supports.

CHAPTER 04

My Applied AI Engineering Approach

Why I combined retrieval, operational context and established application services.



04 My design principle: use relevant context to improve a decision while keeping business rules and execution understandable.

Start with the operational problem

I did not approach the work as a standalone chat feature. I worked on a transport workflow with an identifiable user, an operational need and a next action. That gave the Hybrid Search/RAG work a concrete purpose: improving the guidance available within the transport process, using the information the application already needed to handle.

Combine complementary information

My design combined current carrier and shipment information with operational history and station capabilities. These inputs play different roles. Current state describes the immediate situation; history adds context; capabilities describe whether a service can fit the requirement. I used that combination to connect retrieval and ranking to the transport decision.

Keep the engineering underneath visible

My Java/Spring Boot and REST work was part of the same delivery story as the AI workflow. A recommendation still needs a usable application, coherent integrations and recoverable behavior. I bring the ability to work on those surrounding layers, investigate problems across them and connect AI-related functionality to established enterprise software.

Judge value by the workflow

The supported workflow showed an internally measured improvement above 8% in transport time and operating cost. I connect that result to the operational workflow rather than treating it as a model benchmark. It reinforces what matters to me in applied AI engineering: whether the software helps the user make a better, more efficient business decision.

CHAPTER 05

My Contribution and Its Impact

The scale of my workflow and the wider engagement it belonged to.

20,000+	4	>8%
locations in my workflow	Hybrid Search / RAG milestones	internally measured improvement
My contribution	Java / Spring Boot	Services and enterprise integration
Wider DBot team	+42% / -30%	Performance / infrastructure cost
Wider DBot team	99.95% uptime	Published engagement-level result

05 20,000+ locations and four milestones describe my workflow scope. The >8% result is internally measured; the separate DBot figures describe the wider engagement.

The workflow I helped deliver

My work covered discovery, guidance and booking across more than 20,000 cleaning-station locations. I designed four milestones for Hybrid Search/RAG and connected them to shipment visibility and ranked operational guidance. These figures describe the breadth and structure of the work, alongside the Java services and enterprise integrations I contributed.

The operational outcome

The supported workflow recorded an internal improvement above 8% in transport time and operating cost. This is the outcome associated with that workflow, not a claim about every Alpega customer or the whole transport platform. My contribution combined the intelligent discovery process with the application engineering needed to make it usable.

Part of a broader DBot effort

I worked within DBot's Alpega engineering engagement, which involved more than 15 full-time developers. DBot publishes engagement-level results of +42% performance, 99.95% uptime and 30% lower infrastructure cost. Those results belong to the wider team engagement; my contribution included feature development, integration, quality engineering and stabilization.

What the work says about me

I can move from a business requirement to backend implementation, integration behavior, intelligent guidance and delivery quality. The Alpega work shows that range in a single operational setting. It also shows how I relate technical decisions to business value without losing sight of the hands-on software engineering that makes the result possible.

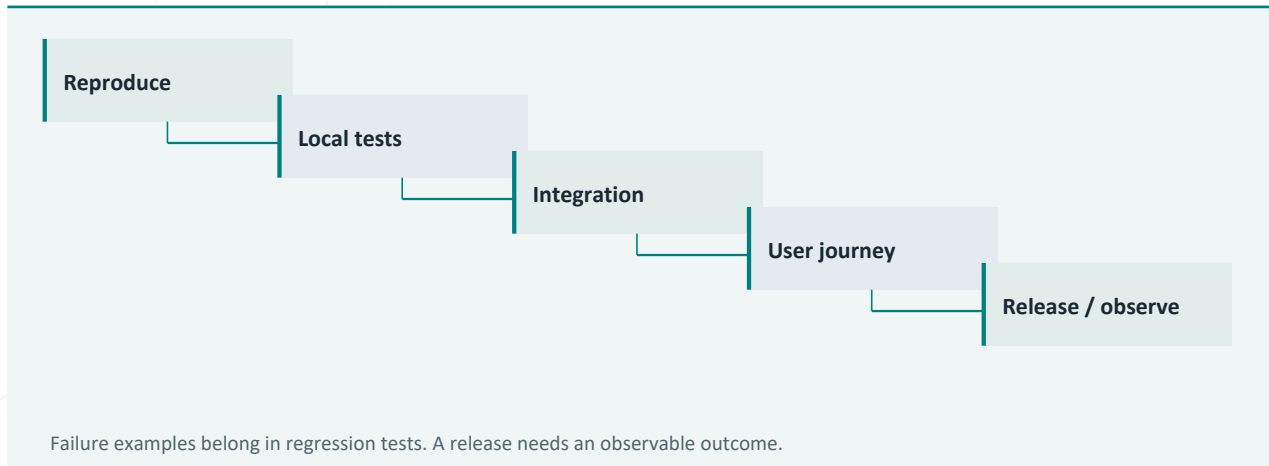
MY CONTRIBUTION AND ITS IMPACT

Internal workflow result; wider DBot engagement results: references p. 9 | References: p. 9

CHAPTER 06

How I Delivered Dependable Software

Testing, investigation and release discipline alongside feature development.



06 My delivery work included automated QA, API/integration testing, regression coverage, CI/CD, documentation and controlled releases.

Quality as part of implementation

I contributed automated QA, API and integration tests and regression coverage. My focus was the behavior users and connected systems depended on, not just whether an isolated method completed. This work supported the transport capabilities I helped build and made changes easier to evaluate before they reached production.

Working across integration boundaries

Enterprise integration was part of my development responsibility. I understand why a successful local request is not always the same as a completed business operation. That distinction informs how I think about test cases, error behavior and the information needed to investigate a failed workflow across connected services.

Stabilization and controlled releases

I worked on production stabilization, documentation, CI/CD and controlled releases. These responsibilities connected development to ongoing operation. I contributed to keeping changes maintainable and repeatable, with regression testing and technical documentation supporting the team beyond the initial implementation.

What I carry into the next role

My strength is combining enterprise software development with applied AI implementation. I can work on Java services and REST integrations, understand the operational domain and design context-aware workflows. I also stay involved in testing and delivery, because a useful AI capability needs the same engineering discipline as any other business-critical feature.

Glossary and References

Technical terms, keyword page references and supporting project context.

Supporting References

[CV] Gerry Walter: career and project history

Personal role, dates, technology stack and contribution details supplied by the author.

[R] Project research and contextual references

Supporting research supplied by the author, 12 September 2026. Distinguishes application history and external business context.

[D1] DBot: Alpega case study

Vendor account of the engineering engagement; more than 15 full-time developers. Verified September 2026.

dbotsoftware.com

[D2] DBot: case-study overview

Published performance, availability and infrastructure-cost outcomes; method and baseline not supplied. Verified September 2026.

dbotsoftware.com

[M1] Alpega: platform background

Alpega customer story published by Microsoft, 15 March 2021. Supporting background for the wider transport-platform environment.

www.microsoft.com

Glossary / Keyword Index

Availability / pp. 7

Uptime measure; its observation window and exclusions matter.

Eligibility / pp. 5-6

Hard operational constraints applied before ranking.

Hybrid Search / pp. 4-6

Retrieval combining complementary matching signals.

Idempotency / pp. 5, 8

Repeated submission produces one intended business effect.

RAG / pp. 4-6

Retrieval-augmented generation: grounding generated output in retrieved evidence.

TMS / pp. 3-4

Transport management system supporting planning and execution.

Visual provenance

Cover and closing artwork: newly AI-generated conceptual illustrations. Technical diagrams: original, editable explanatory drawings. Research excerpts: cropped from the user-supplied PDF where indicated. None is presented as a private application screenshot.

I connect applied AI to working business software.



At Alpega, I combined hands-on Java/Spring Boot engineering with context-aware search and recommendation workflows. I worked across business requirements, service integration, application behavior and delivery quality. My contribution was to connect those concerns in software that supported real transport decisions.

This is how I approach applied AI: understand the business process, make its data usable, connect intelligence to an actionable workflow and take responsibility for the surrounding software. I bring that combination of enterprise development and applied AI knowledge to my next engineering role.

Gerry Walter

Senior Applied AI Engineer

DBot / Alpega / Personal engineering portfolio / September 2026