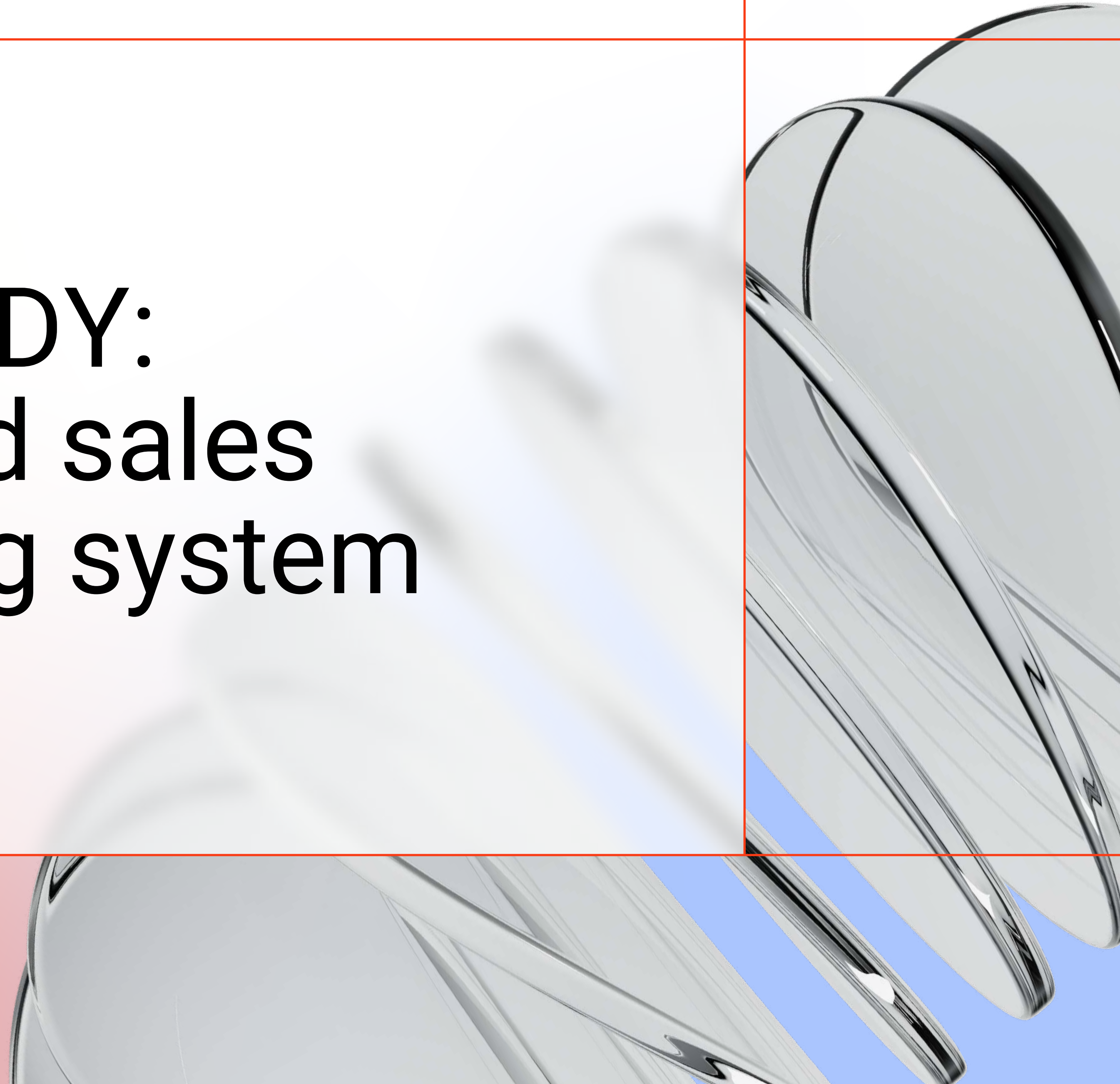


CASE STUDY: Web-based sales forecasting system



Unifying sales forecasting ops within a single web platform

Partner information:

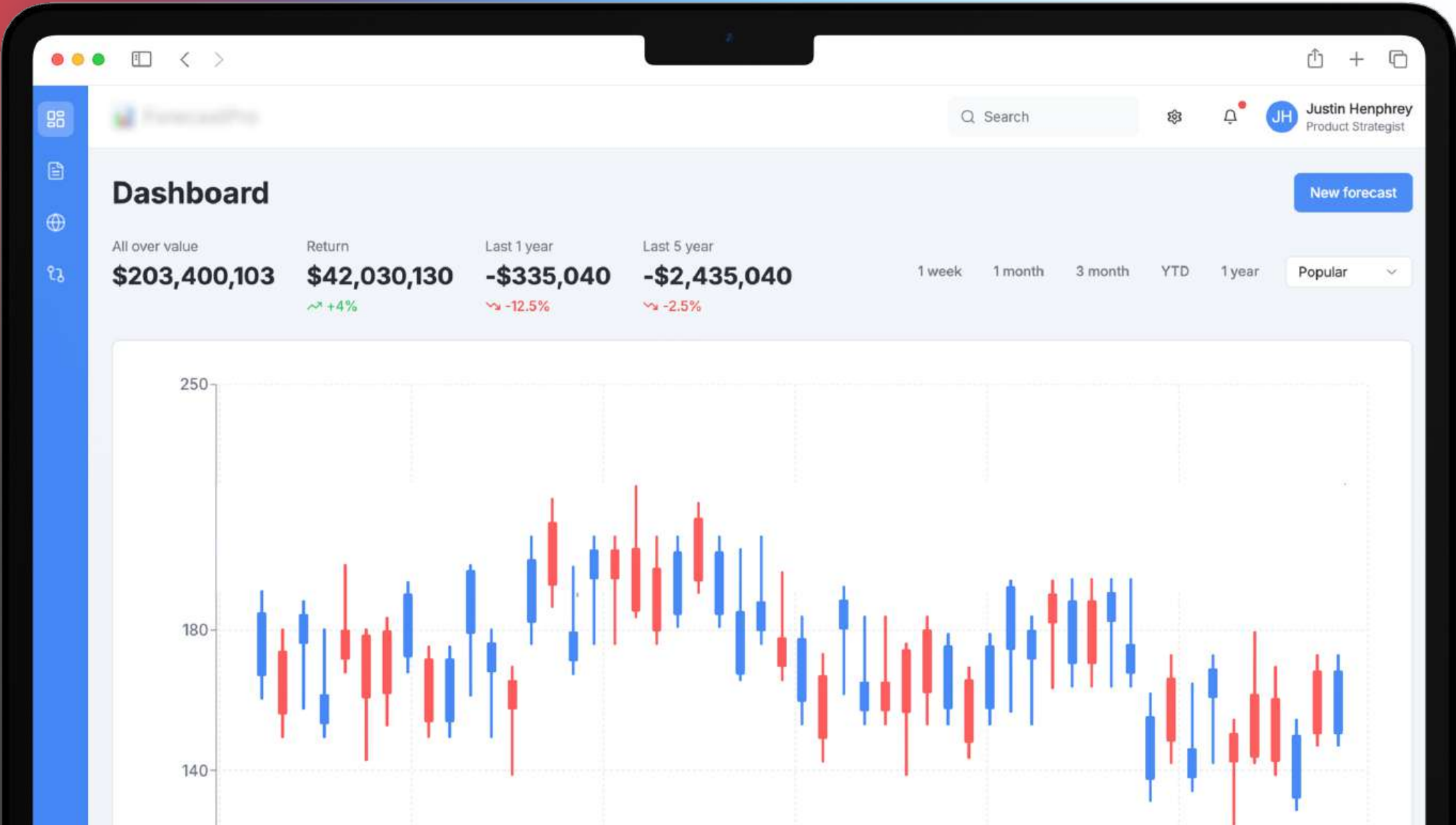
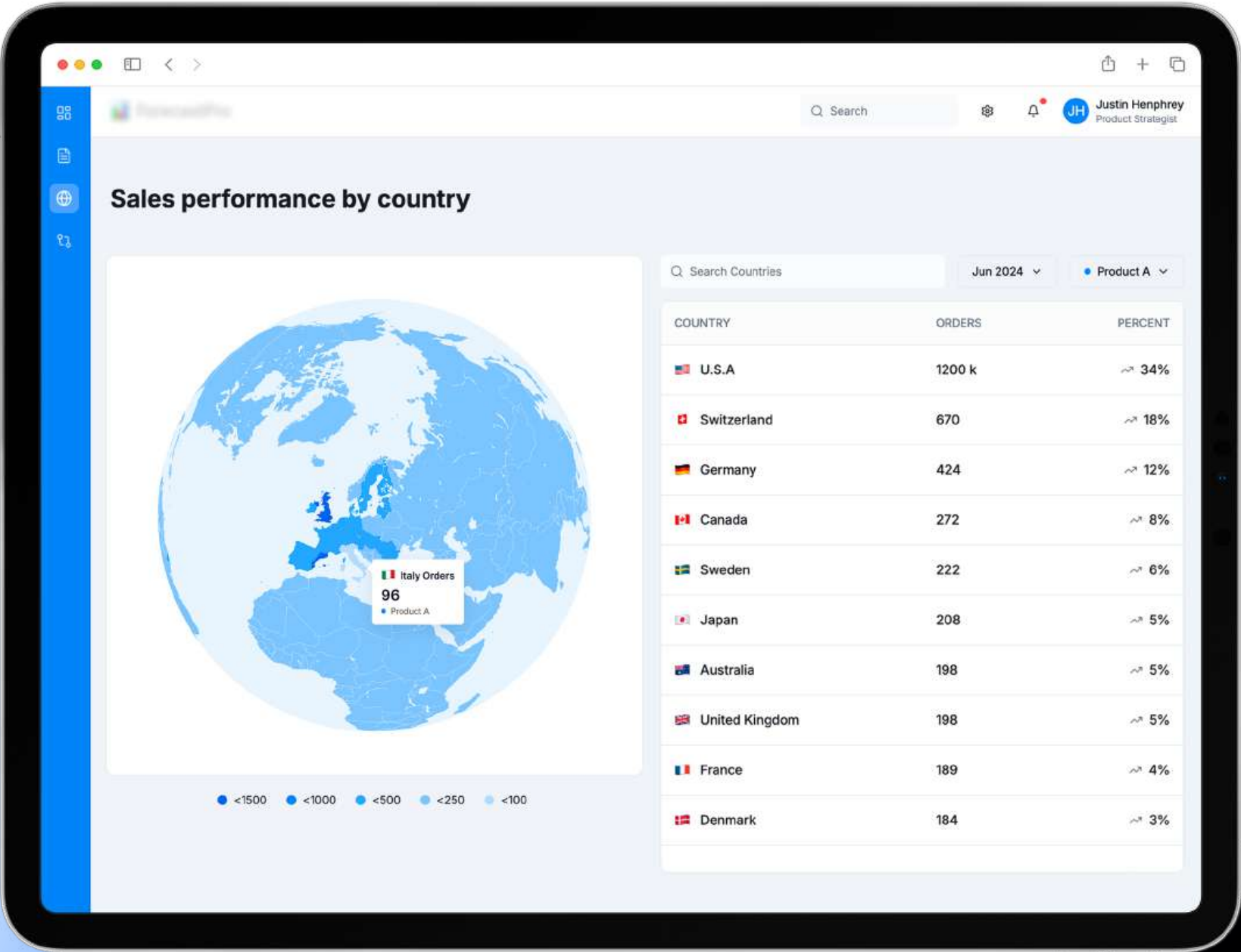
Partner: NDA

Company size: 10k+

Headquarters: Europe (under NDA)

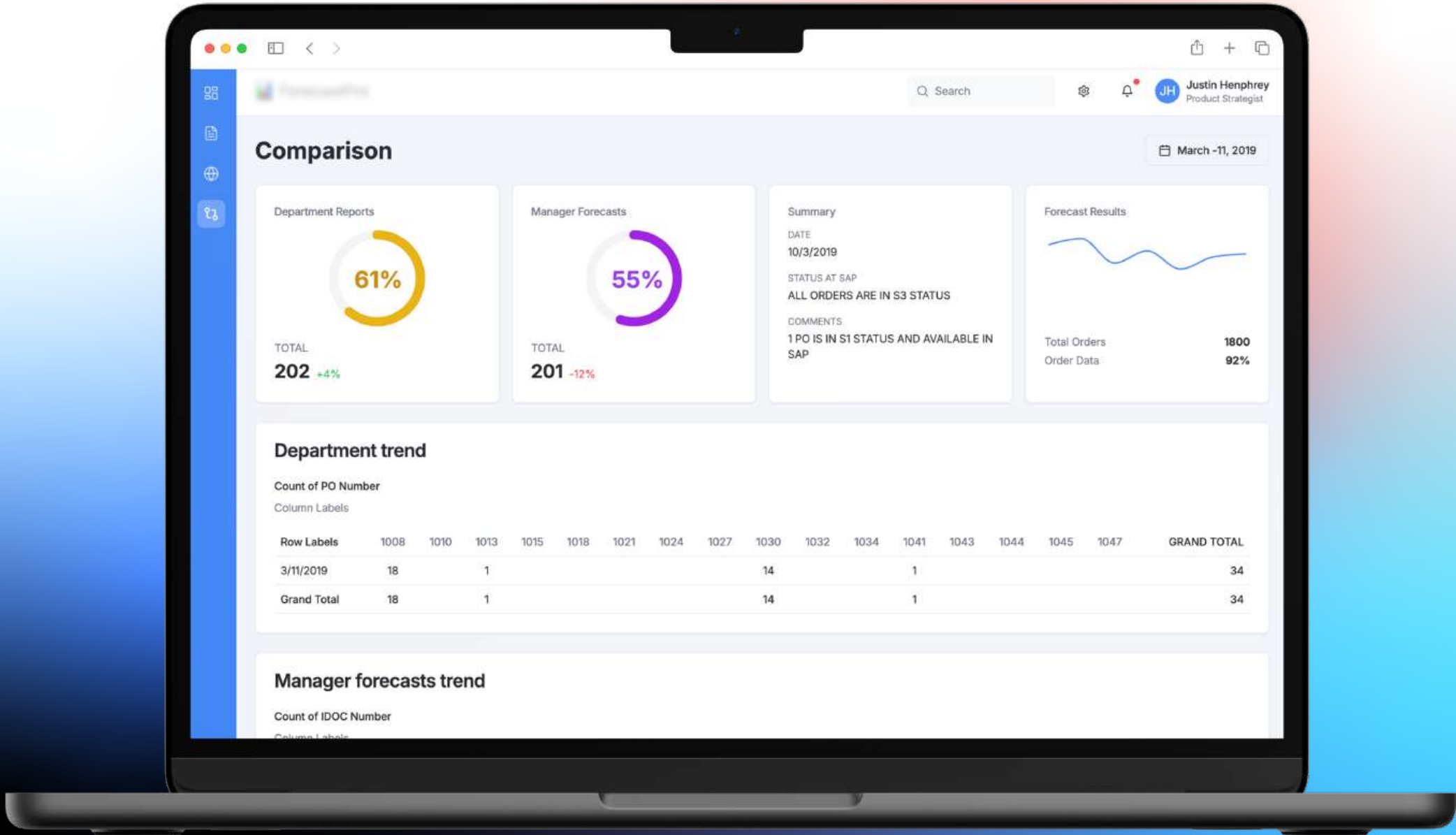
Team size:

Full-stack developers: 2



PROJECT OVERVIEW

A world-renowned automotive manufacturer approached us with a critical business challenge. Their global sales forecasting operations still relied on a decades-old mainframe console application with an outdated text interface. It was later supplemented by a standalone desktop UI for Excel imports and exports, but this created a fragmented workflow where analysts had to juggle multiple systems and files.



Their reliance on outdated tools created more than just frustration—it left gaps in security, produced data inconsistencies, and limited the forecasting precision needed for effective inventory management and market responsiveness.

Together with our partner, we set a goal: to build a centralized forecasting platform that would not only replace their legacy tools but also scale to support evolving sales planning needs in the years ahead.

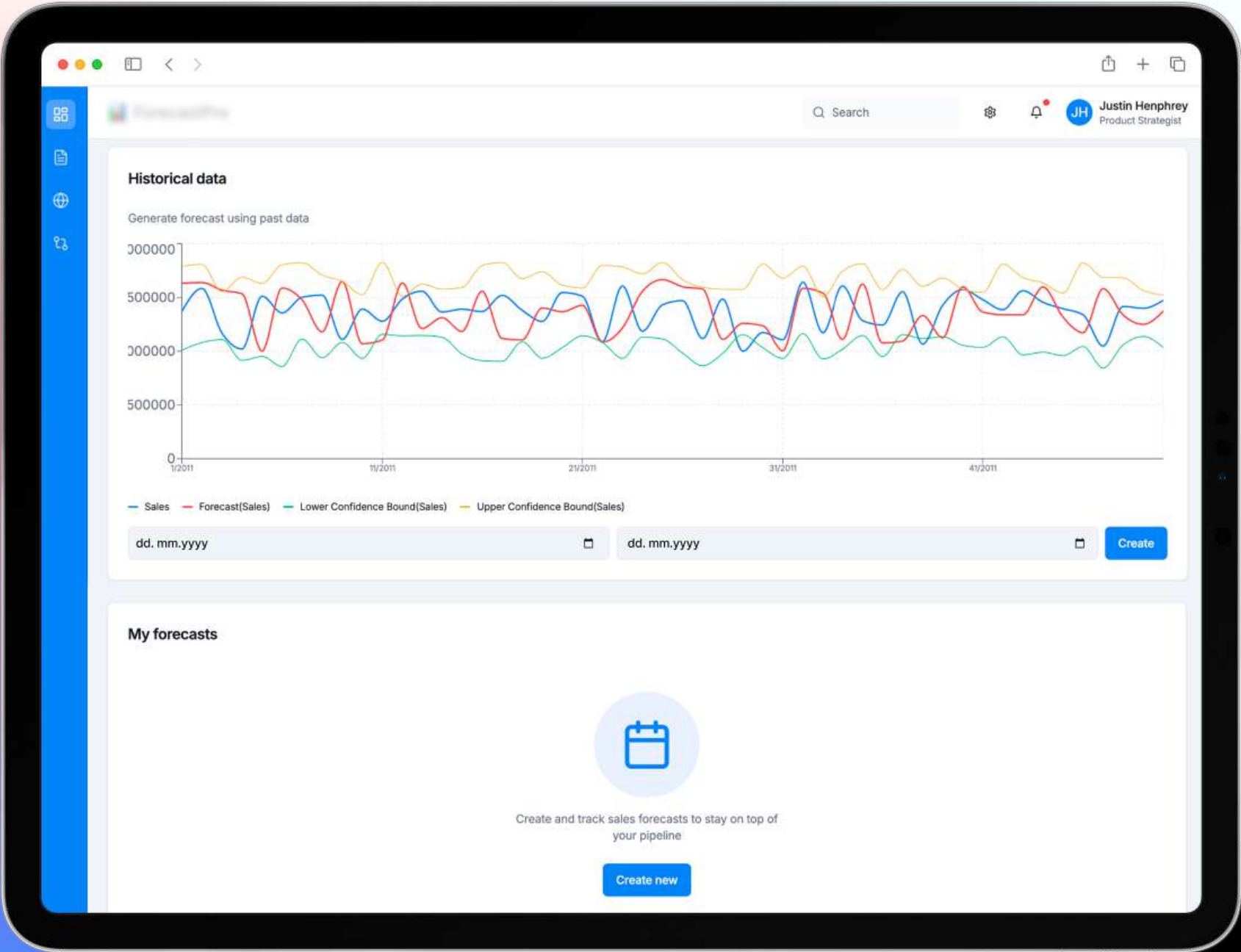
SERVICES & TECHNOLOGY STACK

Provided services

- Backend development
- Frontend development

Technologies & tools

- **Frontend:** Angular, TypeScript, AG Grid
- **Backend:** Java, Spring Boot, Spring Security, JWT, Hibernate, Flyway, Apache POI, Feign, JUnit, Mockito, Testcontainers, Gradle, PostgreSQL, MongoDB
- **DevOps / Infrastructure tools:** Docker, Kubernetes, ArgoCD, Helm charts, Azure DevOps
- **Other tools:** Git, GitHub Actions, Figma



REQUIREMENTS & CHALLENGES

Our partner needed to modernize their global sales forecasting infrastructure by rebuilding it on a modern tech stack. It wasn't their first attempt—previous efforts had made the scale of the rebuild clear. Leadership sought a collaborative approach that would combine their deep domain expertise with external technical capabilities. But this enterprise-level rebuild involved more than just tech stack upgrades. The forecasting teams had long-established workflows and deep domain knowledge that couldn't simply be improved overnight.	Their sales planning operates on a three-tier hierarchy spanning Market Level (individual countries), Regional Level (continents), and Global Level consolidation. Each month, analysts across these levels pulled data from multiple systems and databases to create rolling 24-month forecasts. We needed to consolidate these familiar yet fragmented workflows, replace a decades-old legacy system, build a foundation for future expansion—and maintain service for hundreds of analysts across global markets. As both business scope and requirements evolved over the four years of our partnership, so did the technical challenges we needed to solve:	



REQUIREMENTS & CHALLENGES

	Replacing their legacy system Their forecasting software was a console-based application from the 1980s-90s that was impossible to maintain or update. Analysts had to switch between command-line interfaces and multiple Excel files to forecast sales. We would need to include all of this functionality in the new system.		Enabling scalable forecasting Forecasting was limited to 2-3 data points per market (model + model year), but our partner needed to expand forecasting to hundreds of data points, including detailed product attributes, like engine type and color. The new forecasting platform had to be built from the ground up to handle this level of complexity and future expansion.	
	Improving data accuracy and consistency Staff needed accurate sales planning to avoid leaving unsold cars sitting in lots, or customers waiting months for production. The forecasting system’s accuracy directly affects hundreds of millions of dollars in inventory costs and end customer satisfaction. Improving accuracy across thousands of data points would be a crucial yet complicated process.		Automating forecast data consolidation Analysts were spending large portions of each month copying and merging forecasts across multiple Excel files. Automating tedious consolidation in a single web interface would free them to focus on strategic planning rather than repetitive tasks.	
		Preparing for the future Their new platform needed to be built on a modern architecture that could support continuous growth without major system overhauls, and plans to eventually add AI features and more feature integrations.		

HOW WE WORK



Collaboration approach & process

Our team worked as an **integrated part of the partner's team**, following Scrum best practices with their dedicated Product Owner leading business requirements and priorities. Development happened in two-week sprints, which **allowed us to adapt to changing priorities and deliver improvements quickly**. Each sprint included planning, reviews and demos, building transparency into progress and alignment with business needs.

We also held collaborative workshops where our partner's market analysts and regional managers tested features and provided feedback. Their deep domain expertise was crucial for building a platform that would **work for their established workflows**.

STEP-BY-STEP PROJECT FLOW

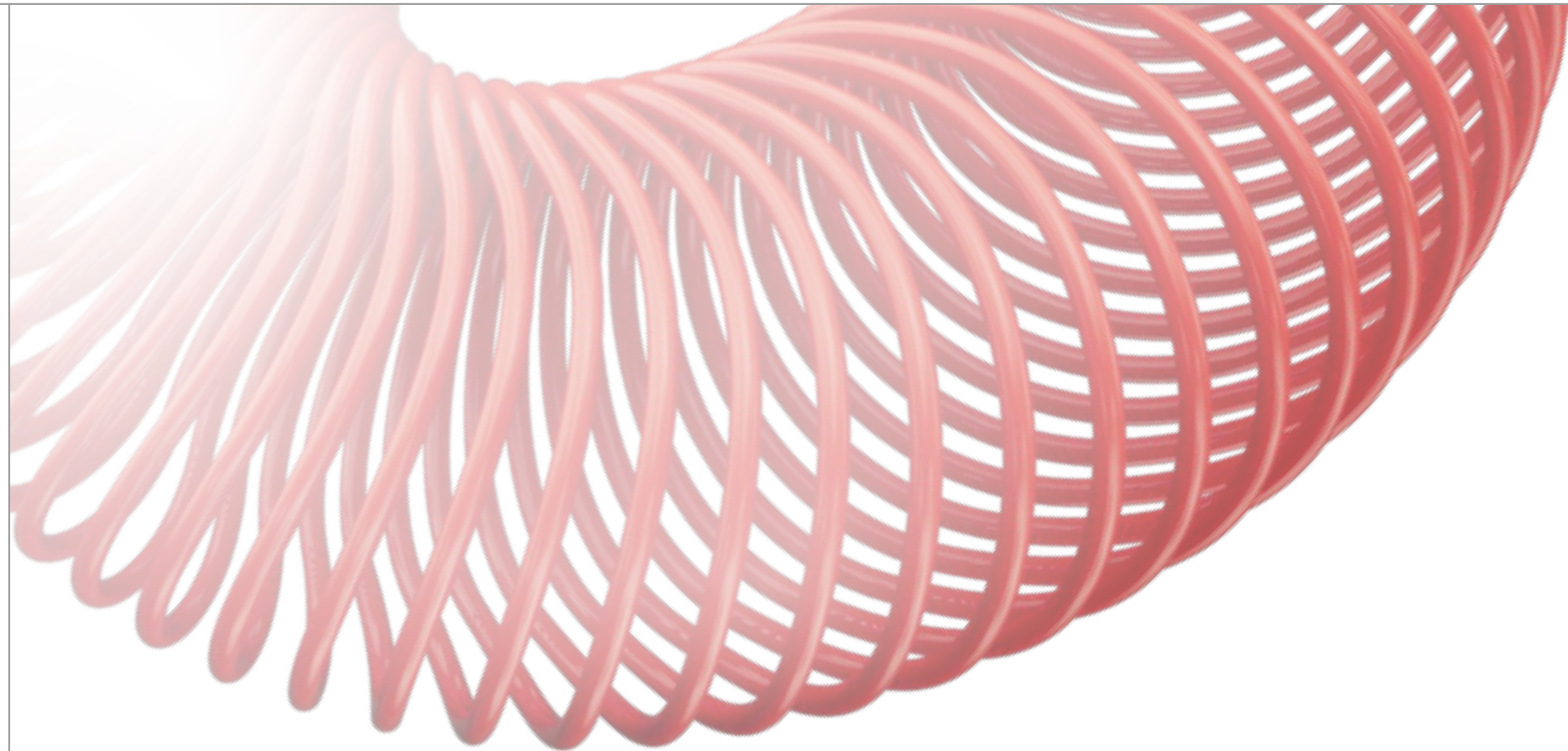
Stage 1: Proof of concept (PoC)

Our collaboration began with a proof of concept, demonstrating how a modern web solution could replace their legacy system. Together with their stakeholders, we tested basic planning flows and initial integrations, gathering feedback for refinement. At this stage, the foundation of the new architecture also took shape: a Java and Spring Boot backend, Angular frontend, and the first set of APIs for role-based access.

Stage 2: Minimum viable product (MVP)

For the MVP, we collaborated with internal teams to deliver the core capabilities: multi-level forecasting aligned with their hierarchical organizational structure (market → regional → global levels), role-based access ensuring analysts only see relevant data, and integrations with existing enterprise systems for vehicle configuration and historical sales data. We set up the database foundation using PostgreSQL for structured forecasting data and MongoDB for historical records from diverse sources. To eliminate manual work, we added validation rules, data transformation pipelines, and consolidation logic that combines forecasts across organizational levels.

STEP-BY-STEP PROJECT FLOW



Stage 3: Expanding into a full platform

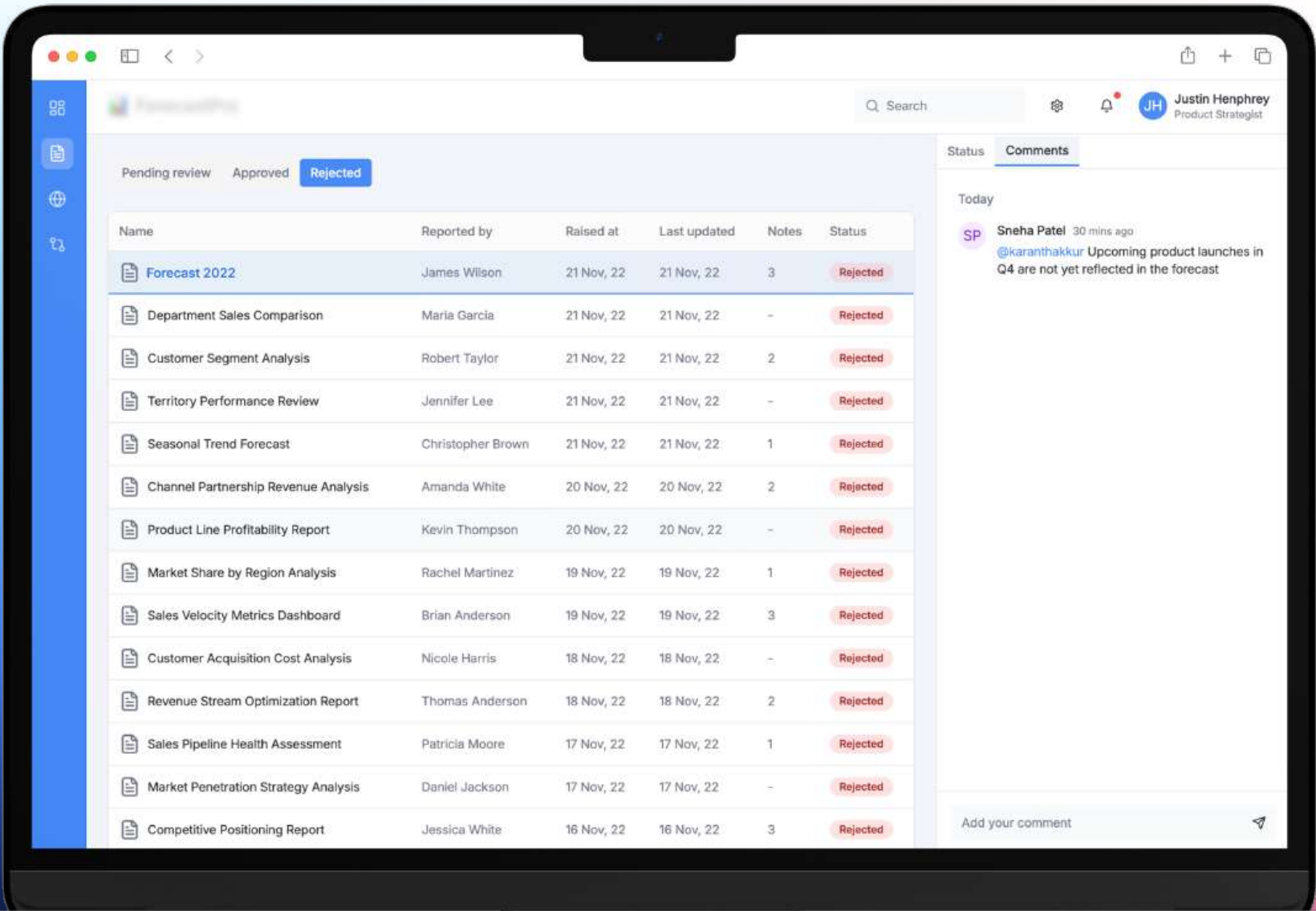
After validating the MVP, we expanded both app functionality and user experience. The Angular-based interface was optimized for complex tabular data, mimicking their forecasters' familiar Excel workflows while creating a space for new web-based capabilities. Collaborative workshops with market analysts and other stakeholders helped our team refine the interface for different user roles. We also added more workflows, including automated consolidation and review/rejection with audit trails. These features let regional and global managers validate market forecasts, send them back for revision if necessary and track accountability.

Stage 4: Production preparation and deployment planning

We are currently setting up production infrastructure and preparing for a phased rollout. Together with our partner's team, we're designing migration strategies for a gradual transition away from their legacy systems while keeping business operations running uninterrupted. By moving to a modular microservices architecture with a modern tech stack, the platform is easier to maintain and expand. There's new room for growth—from potentially adding new forecasting parameters, to integrating AI-driven tools for analytics and more, according to the partner's future goals.



DELIVERED PRODUCTS & FUNCTIONALITY



● **A multi-level sales forecasting workflow:** Staying true to their original three-tiered sales planning hierarchy, analysts at the Market Level can input their monthly forecasts directly into the system. Regional Level managers can view and consolidate forecasts from multiple markets in one interface. Global Level managers can access consolidated regional data for worldwide planning.

● **Role-based data access:** Market Level analysts see only their own data, while regional and global managers have broader views for consolidation. This protects sensitive information while keeping analysts at each level focused on their own responsibilities.

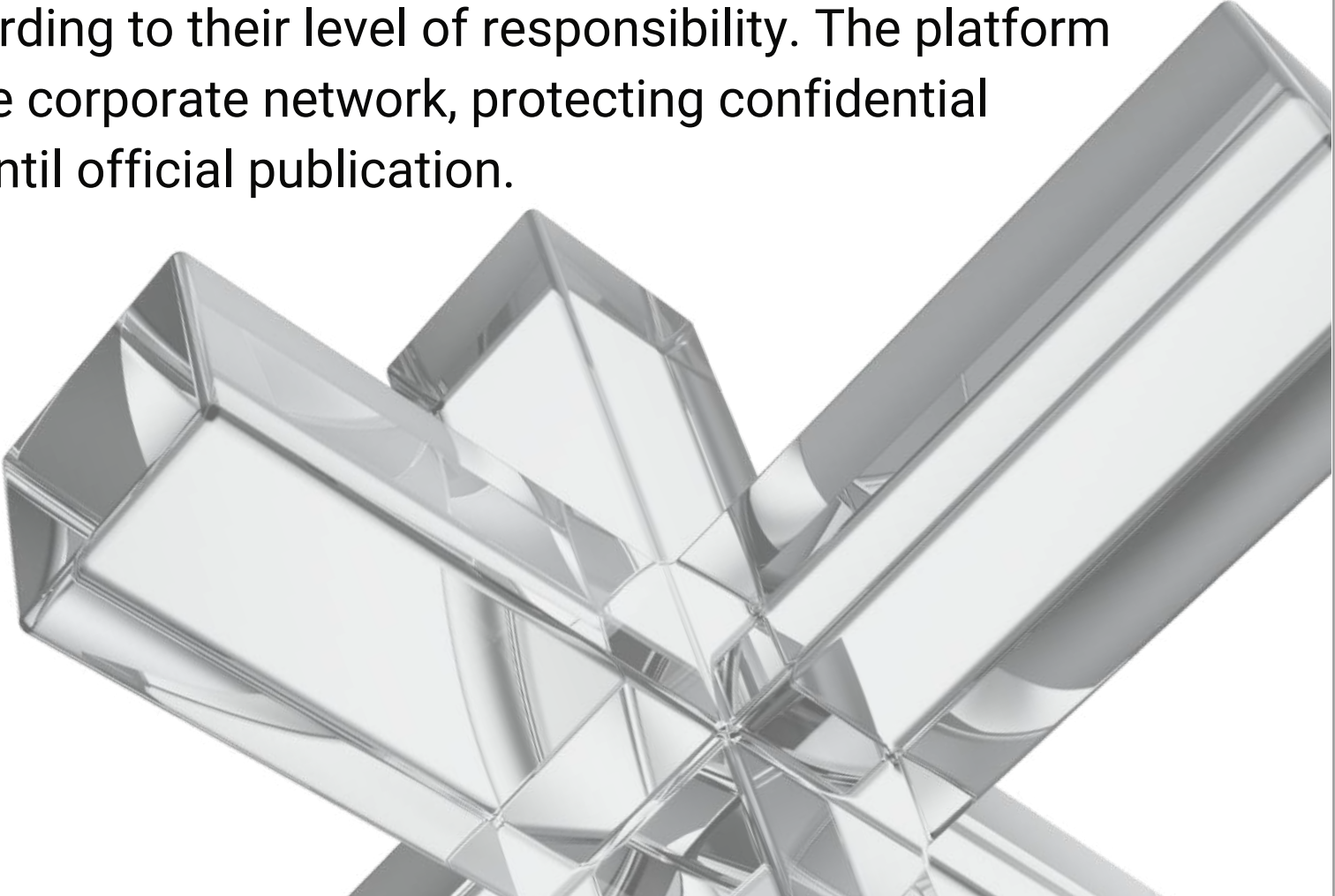
● **Historical data integration:** Analysts can access sales data and targets, unified in one place, including past seasonality patterns and market trends; information that was previously scattered across different systems.

● **Excel-like interface for familiar workflows:** The interface mimics spreadsheet functionality users were already familiar with, while adding real-time collaboration capabilities and centralized data access.

● **Automated data consolidation:** Forecasts are collected in a central database when they're submitted, eliminating weeks of manual copy-paste and ensuring consistency for regional and global review.

● **Review and rejection workflows:** Regional and global managers can leave comments on and reject forecasts, sending them back to market-level analysts for revisions. All changes are tracked for accountability.

PROJECT OUTCOMES

Solved enterprise integration complexity The updated platform integrates with existing enterprise systems, uniting vehicle configuration data and historical sales records. This gives analysts a single source of accurate, up-to-date information for forecasting. Streamlined enterprise data processing Automated data collection and the consolidation of processes handling hundreds of analysts' inputs across time zones and offices worldwide. This removes delays in the monthly planning cycle and keeps data quality consistent, no matter how much data is inputted or where it comes from. Created a future-ready foundation By selecting a microservices stack with Spring Boot, Angular, PostgreSQL/MongoDB, and containerized deployment on Kubernetes, their platform will be able to support new feature add-ons and integrations without large-scale rebuilds. This adaptability gives our partner the flexibility to quickly integrate pioneering tools, for example new AI forecasting algorithms, as they're released.	Built scalable microservices architecture Based on our partner's growth projections and business requirements, we designed a scalable microservices architecture capable of supporting 100x data volume increase. This lets market analysts expand the level of detail in forecasts without slowing down the monthly planning cycle. Strengthened data security Previously, sensitive forecasts were scattered across various Excel files accessible to any analyst. We implemented a secure, centralized database with role-based access controls, ensuring users only see relevant data according to their level of responsibility. The platform operates within the corporate network, protecting confidential forecasting data until official publication. 
---	---



aimprosoft

contact@aimprosoft.com