

High-Performance Web Platform For Scalable Trade Surveillance

Book a Consultation

SERVICES

Web development, backend development, microservices architecture, performance optimization, DevOps, QA & testing, refactoring

INDUSTRY

Capital Markets, Fintech, RegTech

CASE STUDY CATEGORIES

Blockchain, Cloud, Finance, Fintech, Mobile App

TECHNOLOGIES

Java 21, Docker, Kubernetes, AWS, Spring Boot 3, Spring Framework, Spring Data JPA, Hibernate, PostgreSQL

MODERN PLATFORM LAUNCHED WITHOUT REPLACING THE OLD ONE

0 downtime

CLIENT OWNS THE CODEBASE WITH FULL ARCHITECTURAL FREEDOM

100% ownership

orming, scalable trade surveillance solution built on modern microservices architecture. Helping the client transition from a legacy desktop applic

01. Our Client

Our client is a leading stock exchange and financial services provider. By the time we joined the project, they already had a trade surveillance solution that helped financial institutions monitor trading activity and detect unusual behavior—a potential signal of market abuse. However, this solution was a legacy desktop application that no longer met user needs and was too difficult to manage.

To address this, the client decided to develop a modern web-based platform—one that would serve the same purpose but offer enhanced functionality, improved performance, and greater scalability. They chose Teamvoy as a tech partner due to our strong expertise in fintech development, deep industry knowledge, and proactive approach.

02. Challenge

Running a trade surveillance solution on a legacy desktop application created significant challenges for both the client as the provider and the end users.

From the provider’s side, maintaining the application was becoming increasingly difficult. Software updates had to be manually downloaded, installed, and distributed, making version control inconsistent and time-consuming. What’s even worse, the application’s outdated architecture, developed nearly 20 years ago, no longer met modern software standards, which limited its performance, scalability, and innovation potential.

End users struggled, too. The application required significant computing power and memory, which many machines lacked. Without regular updates—something users often postponed—performance degraded over time, further compromising the system’s reliability. The issue became critical during high loads.

The process of storing and processing alerts also needed major improvements to unlock new capabilities for users and enhance their experience.

Given all these challenges, the client made the strategic decision to build a new, modern, browser-based, single-page solution from the ground up. The new system was supposed to handle massive data volumes and provide intuitive tools for end users to:

- Investigate suspicious trading activity
- Filter, tag, and resolve real-time alerts
- Analyze transactions and generate reports

Another key requirement was making the infrastructure scalable, as the client didn’t plan to retire the legacy system immediately. Instead, both systems needed to run in parallel for a while, allowing users to migrate gradually without disrupting operations.

03. Cooperation

Our cooperation with the client began in late 2019 and continues to this day. Teamvoy joined the project as a long-term technical partner and has since helped guide it through several key development stages.

Teamwork

Our partnership is built on shared responsibilities and close day-to-day collaboration between the client’s in-house team and Teamvoy’s dedicated experts:

- The client manages the project, with the project manager based in London.
- Teamvoy’s experts are fully integrated into two mixed Scrum teams working alongside the client’s developers—with the same access rights and security protocols as in-house employees.
- Both teams maintain constant collaboration with the client’s business analysts, DevOps engineers, and technical leads.
- Development follows a quarterly release cycle, with each team taking ownership of quarterly epics and driving ongoing improvements in performance and functionality.
- Teamvoy experts consistently take the initiative and go the extra mile—a mindset actively encouraged and appreciated by the client.

Currently, Teamvoy contributes to the project with two backend developers, one frontend developer, and two QA specialists—all deeply involved in every aspect of development.

Project Stages

Over the past five years, the solution has evolved through several major phases:

- **Initial development.** The first six months focused on rebuilding key features from the legacy system. No clients were onboarded at this stage.
- **Pilot release.** A small group of early clients was added, primarily to validate the system and gather feedback.
- **Further expansion.** The development teams have been enhancing features, building internal tools, and adding new modules such as asynchronous export. Teamvoy experts have also focused on scaling the system to handle increasing user numbers and larger data volumes.

Today, the platform supports around 30 institutions, steadily evolving into a robust, scalable solution designed to handle high-performance demands.



Development

Working closely with the client’s team, our experts have contributed to every major area of the new solution development.

Backend

We designed a modern backend architecture using a microservices-based approach. Currently, the system operates on 8 to 10 independent microservices, each handling a specific task and seamlessly communicating with the others. This makes adding new features faster and easier. Instead of modifying the entire system, new functionality can be implemented as standalone services, which reduces complexity and minimizes risks.

For example, we needed to improve the export functionality to download CSV/XML files asynchronously for large datasets. But the export logic was tightly coupled with other system components, causing performance bottlenecks. To solve this, our team decoupled the logic and created a dedicated, asynchronous export service. Focused purely on data handling, this service significantly reduced memory usage while improving performance.

Frontend

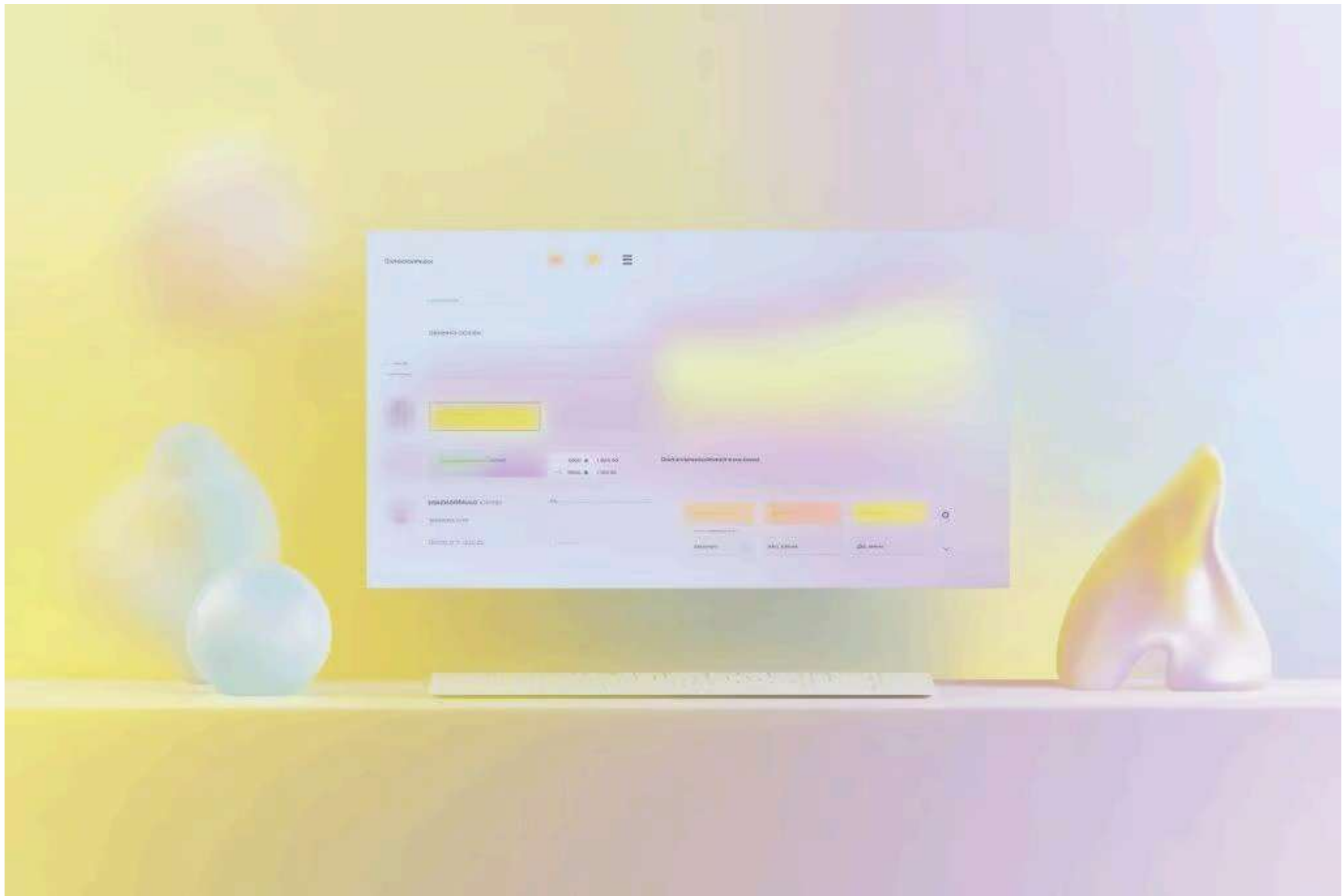
We created an intuitive frontend with key pages, such as the alerts list and dynamic analytics dashboards.

Our developers also built a user interface to support multi-step workflows, allow users to easily manage alert statuses (New, Investigating, Closed), add comments, attach files, and track anomalies.

Additionally, we implemented reusable filter components throughout the platform, ensuring consistency and making navigation easier.

Quality assurance

Our QA specialists play a vital role in ensuring the solution’s reliability and performance. The team conducts thorough automation and regression testing to identify issues before they impact users. Additionally, we consistently address bugs and monitor production incidents across all 30 client installations.



04. Solution

Our experts have successfully developed the core trade surveillance solution along with several internal tools that greatly enhance the client’s operations.

The Trade Surveillance Solution

The trade surveillance solution is a real-time web service designed to help organizations detect, monitor, and prevent market manipulation, insider trading, and other suspicious trading activities across a broad spectrum of markets and asset classes—from equities and futures to cryptocurrencies.

At its core, the solution focuses on **alert management**, allowing users to filter, customize, and sort alerts by parameters such as date and type. This functionality simplifies the process of identifying suspicious activity and enables fast analysis and decision-making.

Alerts are categorized by status—**New**, **Investigating**, or **Closed**—depending on their stage of review. In addition, the platform allows users to add comments, attach files, and track progress. To further enhance investigative capabilities, we’ve implemented analytical functions that aggregate and group similar anomalies, enabling users to spot patterns and trends across alerts.

Powerful charting is another standout feature. It focuses on market transactions rather than individual alerts, providing deeper insights into market behavior.

Internal Tools

Beyond the core product, we developed several key internal tools that enhance the client’s internal workflows:

- **Internal configuration tools.** These intuitive tools help the client’s team easily configure the system for customers (financial institutions) and migrate data. They automate processes that used to be manual and take hours, such as checking if alerts loaded correctly by comparing Excel sheets.
- **System health monitoring.** A robust notification system that helps DevOps specialists detect partial alert failures, system issues, and missing data, ensuring smooth system operation at all times.
- **AI-driven news aggregator.** This system consolidates news to help the client team better understand whether a specific market action is legitimate or potentially fraudulent.

05. Results

Our collaboration helped the client reach key milestones in both product development and internal operations. Together, we achieved the following:

- **Modern platform launched alongside the legacy system.** Successfully introduced a web-based platform running in parallel with the desktop version, enabling a smooth legacy-to-modern transition.
- **Gradual client migration with minimal disruption.** Enabled gradual migration and smooth onboarding of new and existing clients, including those with large data volumes, without interrupting service.
- **Enhanced scalability.** Significantly boosted system scalability, especially in performance-heavy components like exports and dashboards.
- **Optimized data processing.** Improved export speed and efficiency through asynchronous data handling.
- **Reusable architecture and tools.** Delivered reusable architectural patterns and tools that streamlined development across multiple modules.
- **Client-led product evolution.** Established a foundation that gives the client full ownership of the codebase and ensures architectural autonomy, ensuring long-term flexibility and independence.

06. Let's Talk!

Use the power of robust technologies to drive better business results, with our high-quality team

Talk to An Expert