

# Legacy Code Refactoring & Performance Optimization

By upgrading aging infrastructure and modernizing the application's architecture, Innovecs significantly boosted speed, stability, and user engagement across the client's suite of digital collaboration tools.

INNOVECS

FUNCTION

DATE

17/03/2024

ACTION

Edit

Total Sales

\$1,245,00

Order

+ +

SU

G

## Industry

High Tech

## Location

Global

## Cooperation Model

Mixed: Team extension +  
Innovecs' Management

## Team Composition

Backend (Java/Kotlin), Frontend (React),  
QA (Automation and Manual) Engineers

## Expertise Delivered

Backend Development, Infrastructure  
Optimization, Legacy System Migration,  
Project Management, QA

## Technologies & Tools Used

APACHE KAFKA

CANVAS API

ELASTICSEARCH

EXPRESS.JS

GRAPHQL

NODE.JS

PROGRESSIVE WEB APPS (PWA)

REACT

SERVICE WORKERS

TYPESCRIPT

WEBGL

WEBRTC

WEBSOCKETS

# Applicable Domains

COLLABORATIVE SOFTWARE

DESIGN TOOLS

VIDEO CONFERENCING

PROJECT MANAGEMEN

CRM

DIGITAL WHITEBOARDS

REMOTE WORK PLATFORMS

CREATIVE SOFTWARE

BUSINESS INTELLIGENCE

COMMUNICATION PLATFORMS

# Challenge

The application suffered from stability issues and performance bottlenecks caused by **outdated code and aging technology infrastructure**, with 23% of users experiencing slow load times and application crashes occurring 3x more frequently than industry benchmarks

# Solution

Implemented a systematic approach to performance optimization focusing on application stability improvements, legacy code rewrites, and adoption of modern technologies and platforms.

Established monthly brainstorming sessions generating an average of 12 performance hypotheses per month, with changes measured against key performance indicators

**Load Balancer**  
NGINX, SSL

## Frontend Layer

**React App**  
TypeScript, PWA

**Service Worker**  
Caching, Offline

**WebGL Canvas**  
Hardware Acceleration

## API & Real-time

**GraphQL API**  
Apollo Server

**WebSocket**  
Real-time Updates

**WebRTC**  
P2P Communication

## Backend Services

**Node.js Cluster**  
Express.js

**Redis Cache**  
Session & Data

**Elasticsearch**  
Search & Analytics

## Monitoring Stack

**DataDog**  
APM, Metrics

**New Relic**  
Performance

**Sentry**  
Error Tracking

**Grafana**  
Dashboards

## Speed

- Load time < 3s
- FPS > 60 Hz
- Time until interaction
- FPS > 30 Hz
- Load time < 10s
- Memory consumption

## Systems

- Good internet (BW, latency, etc)
- High spec devices
- Bad internet (BW, latency, etc)
- Low spec devices
- Chrome support
- EDGE support
- Safari support
- Desktop
- Mobile
- Tablet
- Very large touch displays

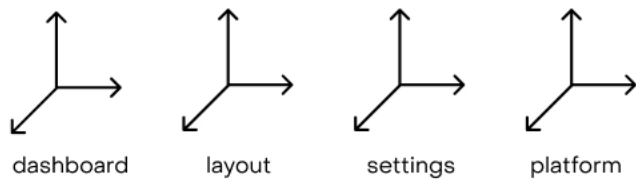
## Situations

- 1 empty board open
- Simple features
- 0 collaborators
- 5 normal boards open simultaneously
- 5 collaborators
- Complex features
- 10 large boards open simultaneously
- Elaborate use cases
- 20 collaborators

## CANVAS

- Board load time
- Navigation frame rate
- Time to interact

This complexity repeats itself for various parts of our product:



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## Results



**78%**

improvement in application speed



**90%**

performance in live environments



**8.5 sec to 2.1 sec**

average load times decrease



**34%**

improvement in user retention rates

# Business Value

## » Significantly Enhanced User Experience

- Faster, smoother interactions across all user journeys.
- Near elimination of crash-related user drop-offs.

## » Increased Platform Reliability

Downtime reduced dramatically through proactive refactoring and monitoring.

## » Improved Customer Retention

More users staying engaged thanks to better load times and responsiveness.

## » Operational Efficiency

Streamlined codebase allows for faster feature rollouts and easier maintenance.

## About Innovecs

Innovecs is a global digital services company operating in the US, the UK, the EU, Israel, Australia, and Ukraine. We operate as a parent company, offering a tech-driven ecosystem of expertise, services, and solutions through specialized sub-brands: Innovecs High Tech, Innovecs Supply Chain, Innovecs Games, and Innovecs Play.



## Quick facts

13

Years of cross-industry experience

25

Delivery locations worldwide

650+

Highly skilled developers, engineers, architects

150+

Happy clients

92%

NPS score

127%

Business growth over the past three years

## Representative Offices

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