Qualium Systems

**XR, MOBILE & WEB APPLICATION
DEVELOPMENT**

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ISO 9001:2015
CERTIFIED COMPANY

ISO/IEC 27001:2022
CERTIFIED COMPANY

15+ YEARS OF DEVELOPMENT EXPERIENCE

200+ PROJECTS COMPLETED

80%+ RECURRING CLIENTS

Qualium Systems is a high-end software development company creating AR/VR/MR, Mobile and Web applications for digital agencies, startups, and enterprises.

We provide our clients a full suite of software services:

- discovery and analysis
- technology consulting
- design
- software development
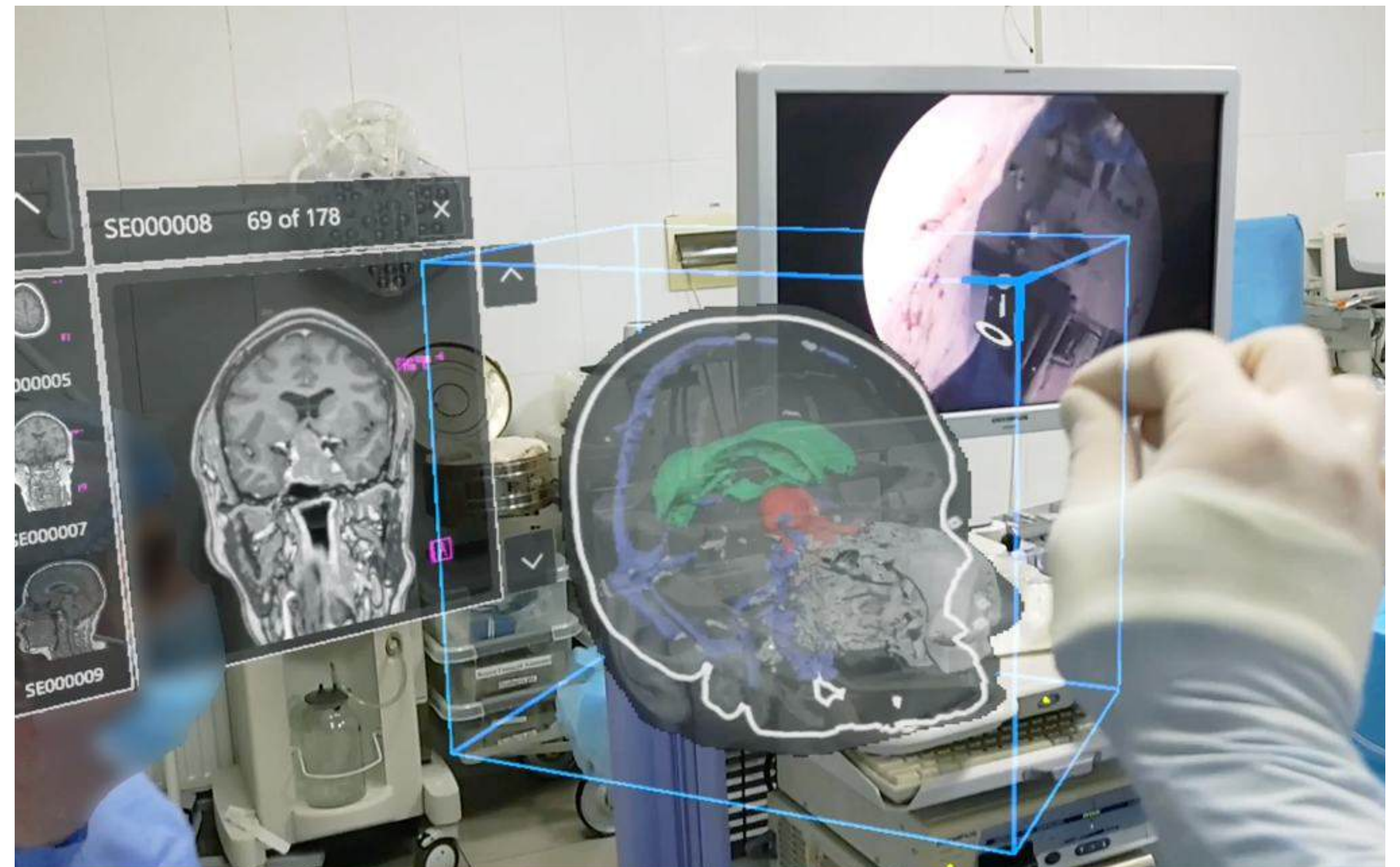- quality assurance
- maintenance and support

Advancing Neurosurgery with AR

Domain: Healthcare

Technologies: Unity, Vuforia, MRTK, WebRTC, DirectX, LiteNetLib, Fellow Oak DICOM, Zenject, UniRx

eXtra Vision is a cutting-edge augmented reality application tailored for neurosurgical procedures like tumor resections and cranial surgeries, which enhances the preoperative planning process by overlaying detailed 3D anatomical models directly onto the physical workspace in real-time.

- AR 3D model alignment functionality with 3D QR code markers was incorporated to accurately position virtual models in real-world environments and ensure continuous tracking.

- Overall operational accuracy is enhanced by aligning surgical instruments with spatial coordinates of Mixed Reality glasses.

- The implementation of a WebRTC-based rendering engine allowed for streaming pixels directly to the MR or Spatial Computing glasses over a local network.

Next-Gen XR Medical Education

Domain: Healthcare

Technologies: Unity Engine, Wave SDK, Photon Fusion, OpenAI API, URP, Firebase, DOTween, Extenject (Zenject)

V-Med Pro is a VR/MR application designed to revolutionize medical education through interactive 3D anatomy and emergency response scenarios. It enables users to explore the human body and take on various medical roles in a shared virtual space.

- The project includes an interactive 3D anatomy model with 990 detailed body parts, allowing users to manipulate them through hand gestures and an intuitive user interface.

- It supports multi-user real-time collaboration for up to 20 participants using Photon Fusion, enabling synchronized and interactive learning in shared virtual spaces.

- AI-driven emergency scenarios feature NPCs that simulate realistic conversations, enhancing users' communication and decision-making skills in lifelike situations.

VR Chemistry Lessons App

Domain: Education

Technologies: C#, Unity, MRTK, OpenBabel, Newtonsoft JSON

The task was set to develop a VR edutainment app with the gamification element to motivate students to study chemistry. It contains a learning plan in a playful form with animation, interactive environment, and a score table reflecting current progress.

- Game mechanics, tutorials, and visual effects are an integral part of the learning process; tips, quests, and scores make high school chemistry program more accessible

- The app uses VR headset Oculus Quest 2 and hand tracking

- An in-app interaction model is based on gestures (no controllers involved) adding extra immersiveness to the learning process
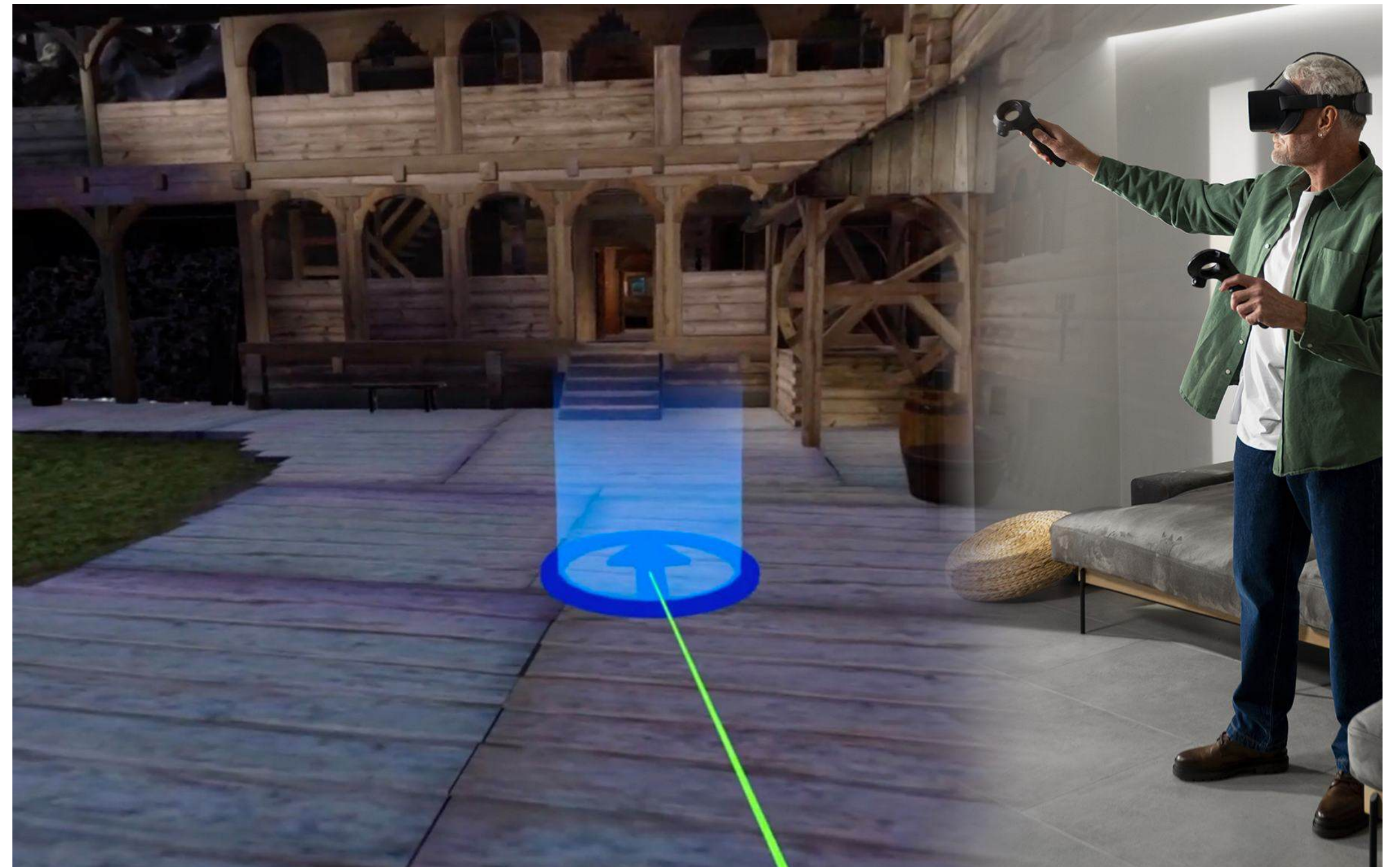
Medieval Fortress Virtual Journey

Domain: Art and Museums / Heritage

Technologies: C#, Unity, Oculus SDK

Tustan was a Medieval cliff-side fortress-city whose remains are located in the Ukrainian Carpathians. The Qualium Systems team built an Oculus Quest 2 virtual journey app where users can navigate through every room and see the fortress the way it looked hundreds of years ago.

- Started as a research project, Virtual Tustan transformed into a unique immersive experience, allowing every museum visitor to walk through the medieval city that was ruined hundreds of years ago

- The 3D fortress was recreated in tiny detail based on the reconstruction work of the Tustan archeological team

AR Heritage Monitoring Project

Domain: Art and Museums / Heritage

Technologies: Three.js, Node.js, Next.js, React.js, Elasticsearch, Docker, PostgreSQL, Ant Design, Google's Model Viewer

The Heritage Monitoring project (HEMO) is an interactive platform designed to offer accessible and detailed information about Ukraine's archaeological heritage preservation and exhibition.

- Users can explore artifacts in detail, rotating, zooming, and examining high-resolution 3D models to better understand cultural and historical objects.

- Integrates 3D models into AR environments, allowing users to place artifacts in their physical space for a more engaging experience.

- Defined roles like Admin and Content Manager ensure secure artifact management, with a moderation process requiring admin approval before publishing.

Chad 360 VR Overview for United Nations

Domain: Education / Documentary

Technologies: Unity, Oculus SDK

Chad 360 VR is a unity-based VR application immersing users in Chad province. Explore landscapes and narratives, including the compassionate acceptance of Sudanese refugees. The advanced 360-degree video player allows users to actively engage and realise challenges faced by both refugees and Chadian locals.

- The application features a state-of-the-art video player supporting 360-degree videos, delivering a captivating and immersive experience.

- Users can gain a comprehensive understanding of the socio-economic and cultural dynamics of Chad province.

- The application allows users to navigate various locations and pivotal moments at their own pace, enhancing the personalized and enriching experience.
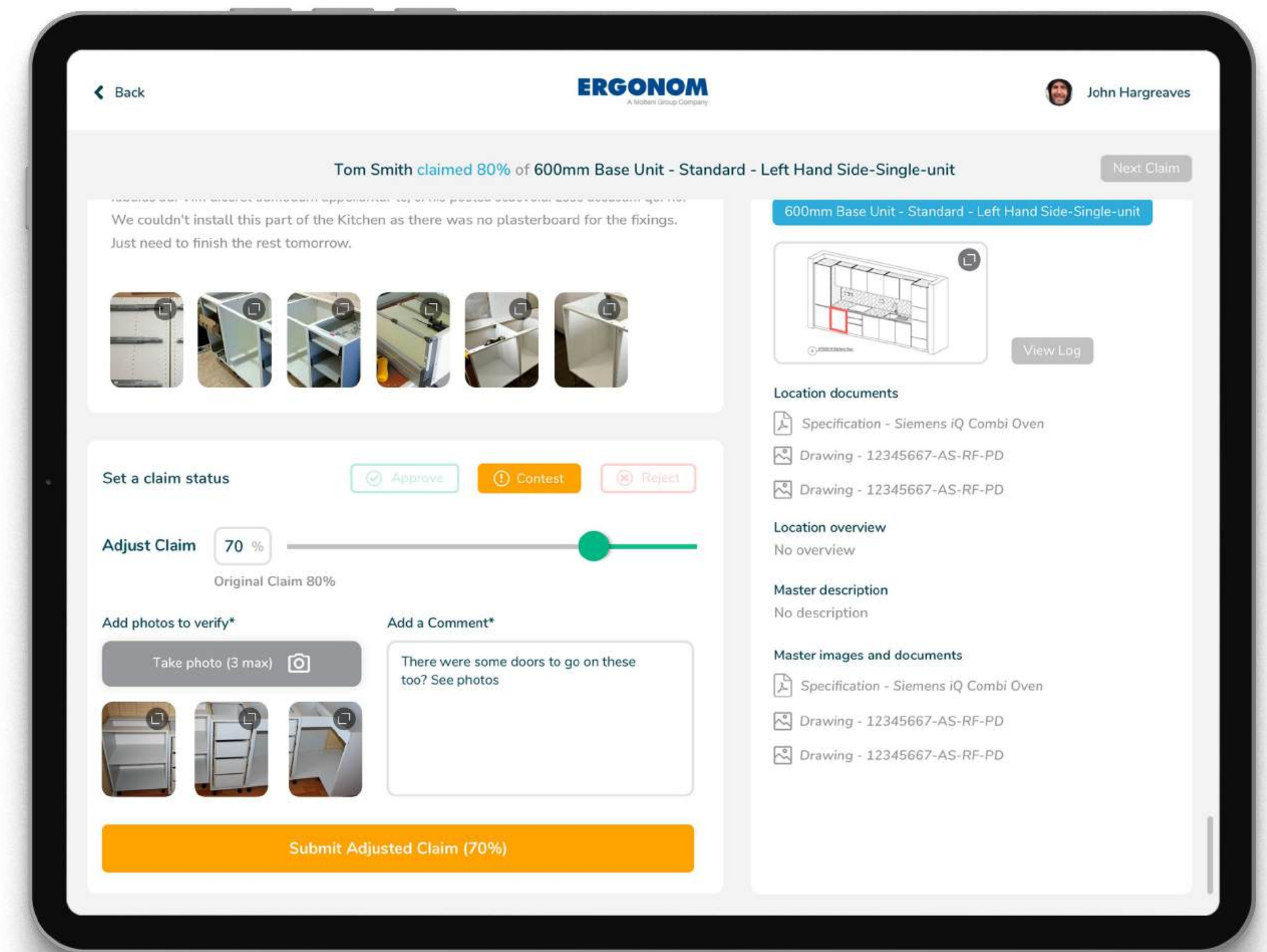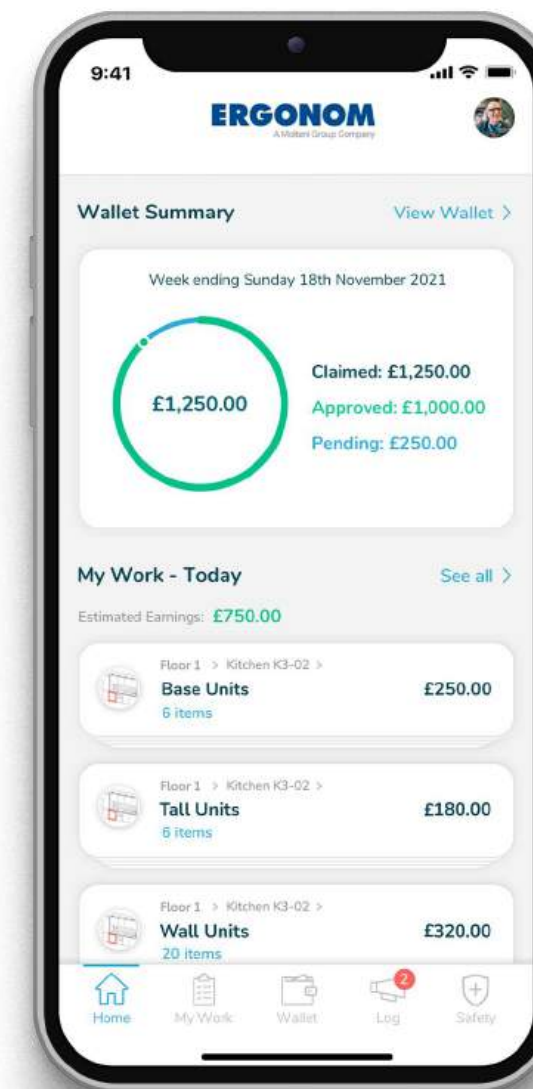

Refugees on the border

Construction Project Delivery Software

Domain: Construction

Technologies: React Native, TypeScript, Redux, MS Application Insights, MS App Center

Mylo is a management software for construction projects that measures granular detail to track end-to-end process & progress. A complete life-cycle of construction project data ensures full visibility of cost, allowing to prevent cost overrun and save millions on every project.

- Contractors app: track work progress, claim payments, view earnings and report risks

- Supervisors app: review the work, approve/decline claims, manage variations

- Full log history: every action is logged by the system

- Advanced offline mode: all critical data is cached and available offline, all outgoing data is synced when back online
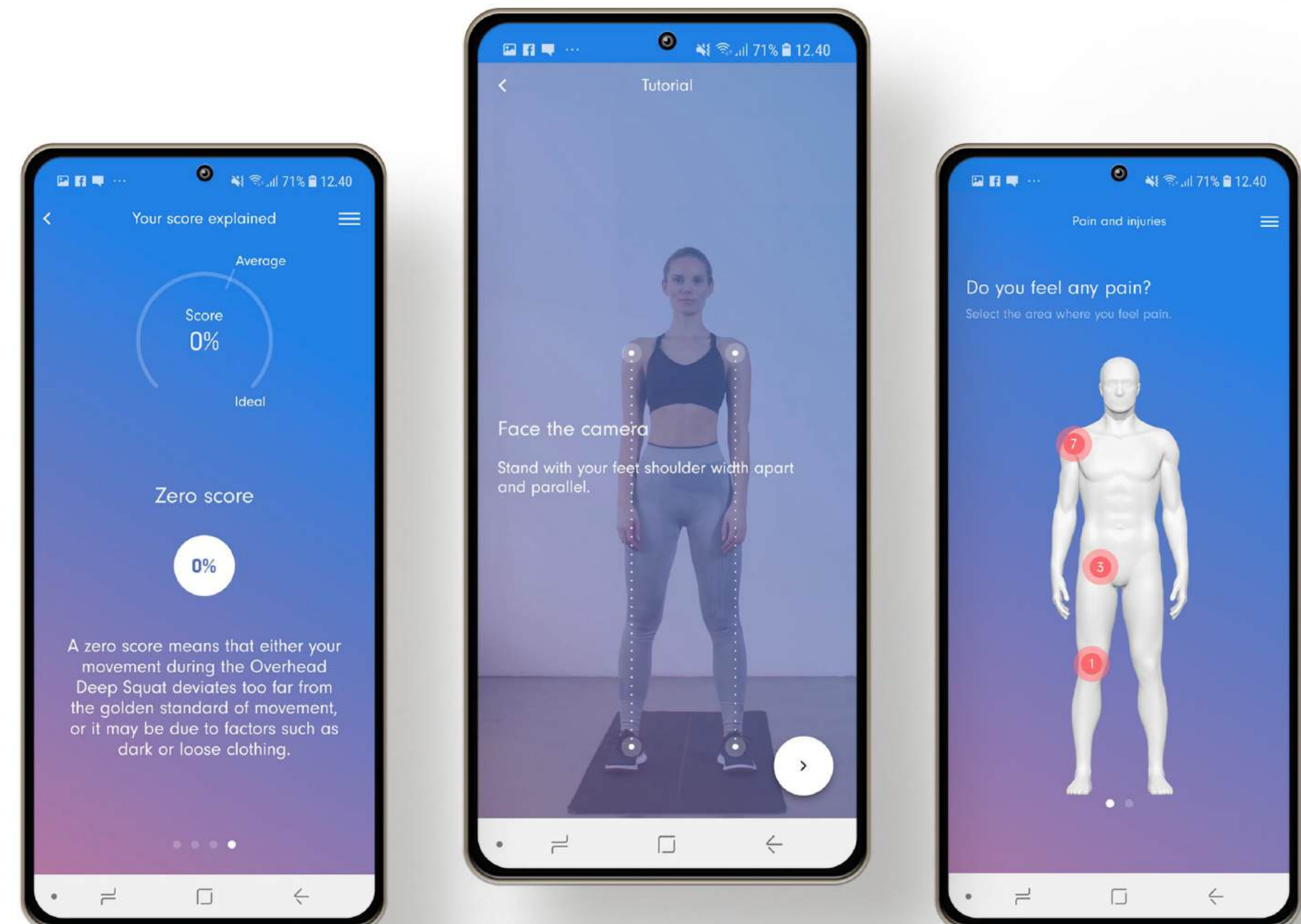
AI-based Movement Analysis App

Domain: Healthcare

Technologies: Angular, Ionic, Cordova, TensorFlow, Node.js

AIMO is a health care product designed to track people's health on a daily basis and share data with their trusted experts. The key functionality is video recognition of users' exercises with subsequent real-time feedback generation in their phone.

- Powered by artificial intelligence and 3D camera sensors, AIMO analyses and scores human movement, while AI algorithms detect even the smallest movement compensations

- The movement scan provides a user with personal AIMO score, an assessment of a person's musculoskeletal system

- A user sends updates on their wellbeing to an advisor, who can download a health report with full information and give recommendations
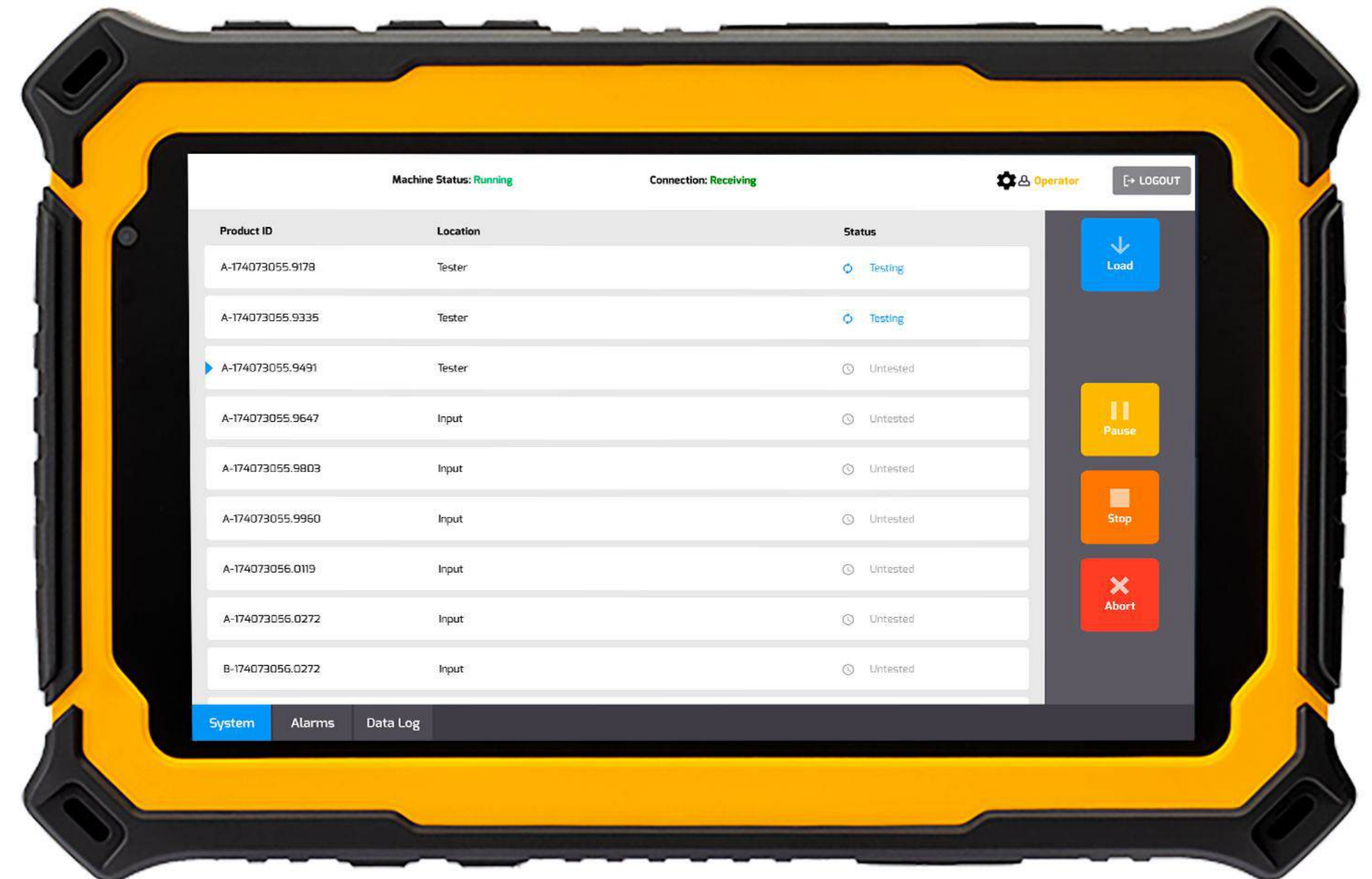
Remote Inspection and Control App

Domain: Internet of Things

Technologies: Java, JavaScript, React Native, ZeroMQ, Redis

ICT Sorter is an IoT system for inspecting the quality of PCB (printed circuit board) products. The Qualium Systems team implemented the tablet operator app for remote supervision and control of the robotic station where the PCB testing is performed.

- Multilevel access: Operator, Maintenance, Engineer, and Factory levels

- Data log providing detailed information on every step of the process

- Possibility to set up robot configuration

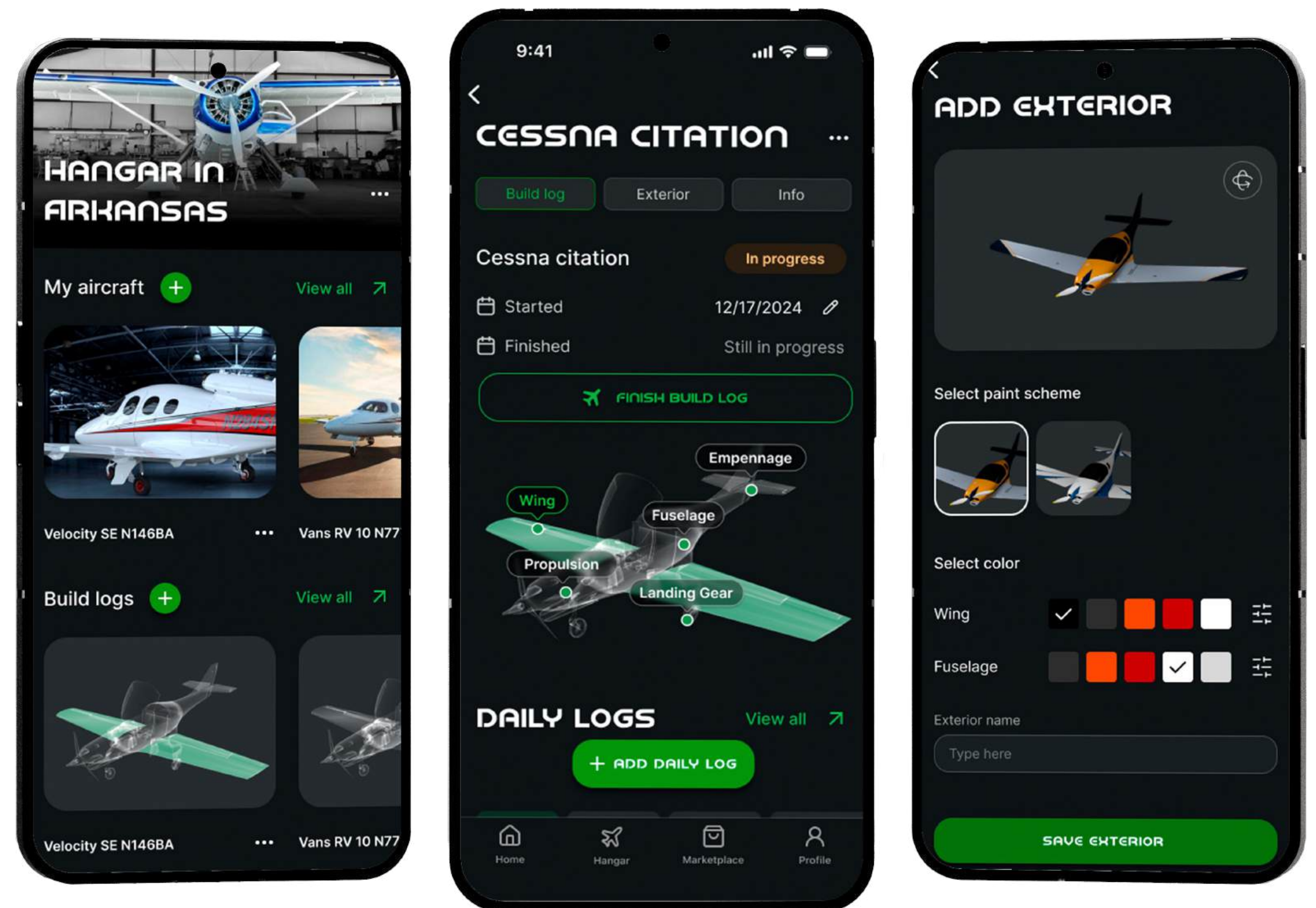- Raw sockets and Redis events used to send commands and get status updates from the robot in real time

Aircraft Builder & Community App

Domain: Aviation & Aerospace

Technologies: Three.js, React Native, React, TypeScript, Redux, Ant Design, Node.js, Nest.js, PostgreSQL, Firebase, Google Cloud

A comprehensive digital platform for aircraft builders and aviation enthusiasts to document construction progress, manage aircraft profiles, design exteriors in 3D, and interact within an aviation community.

- Aircraft management with virtual hangars, including detailed profiles, technical specs, and construction history

- Build logging with support for photos, videos, voice notes, and progress tracking via interactive 3D aircraft models

- 3D exterior customization tool with dynamic paint scheme editing, real-time previews, and spec export capabilities

- Social news feed with milestone publishing, content browsing, commenting, and filtering by aircraft type or build stage
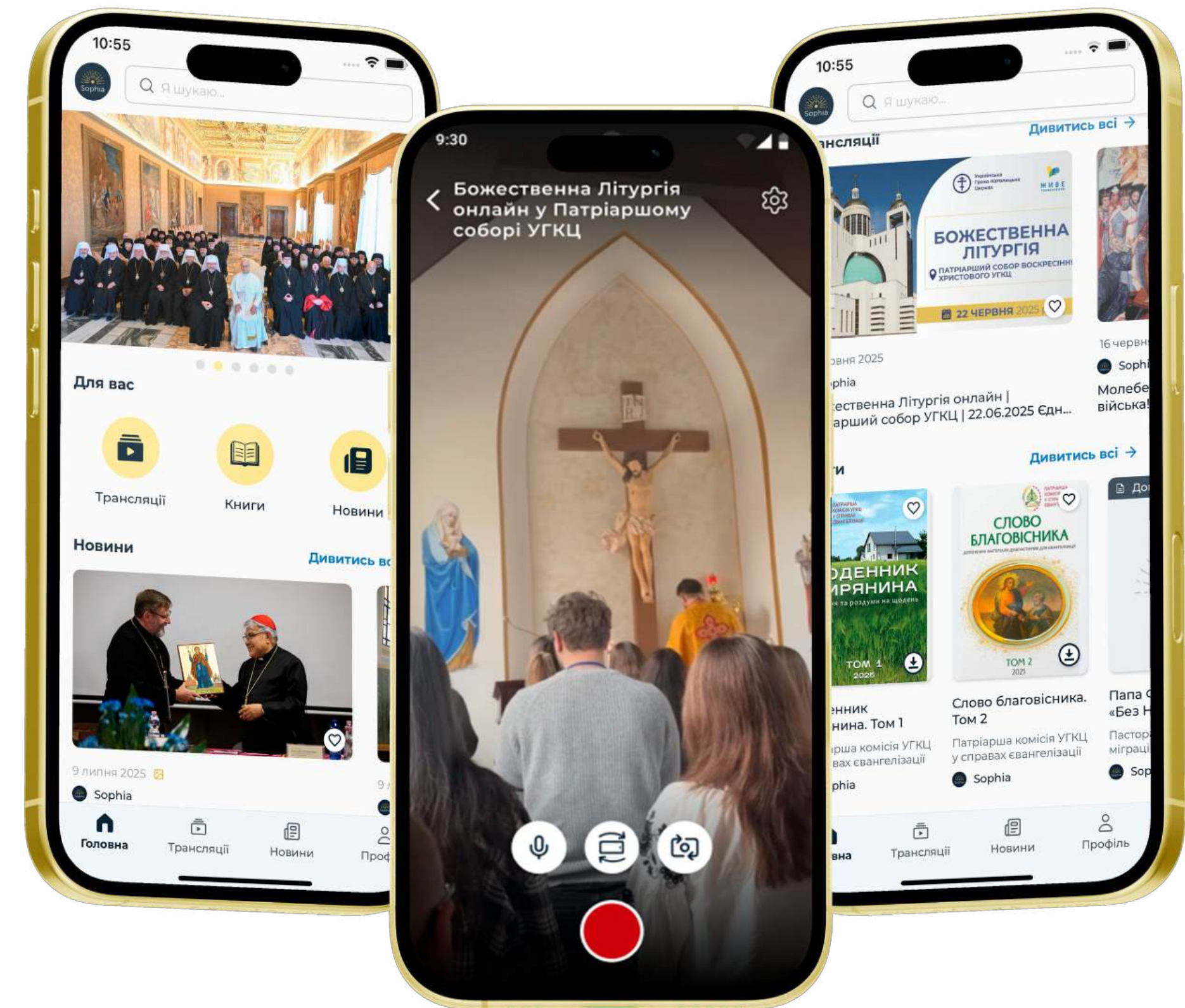
Streaming & Media App for UGCC

Domain: Non-Profit / Religious Organizations

Technologies: React Native, React, Node.js, NGINX-RTMP, Ant Design, PostgreSQL, Amazon Web Services

A mobile application developed for the Ukrainian Greek Catholic Church (UGCC) to support digital spiritual engagement. The app provides access to livestreamed and archived liturgies, a rich library of books and audio materials, donation tools, personalized user experiences, and offline access — all in one intuitive platform.

- Seamless integration of live and on-demand broadcasts with flexible filtering by date, region, and event type, optimized for smooth performance and minimal latency.

- Efficient content caching for books, PDFs, and audio materials, with progress tracking and synchronization across devices for uninterrupted offline use.

- Built-in support for Visa, MasterCard, Apple Pay, Google Pay, and bank transfers, with encrypted transaction handling and detailed donation history.
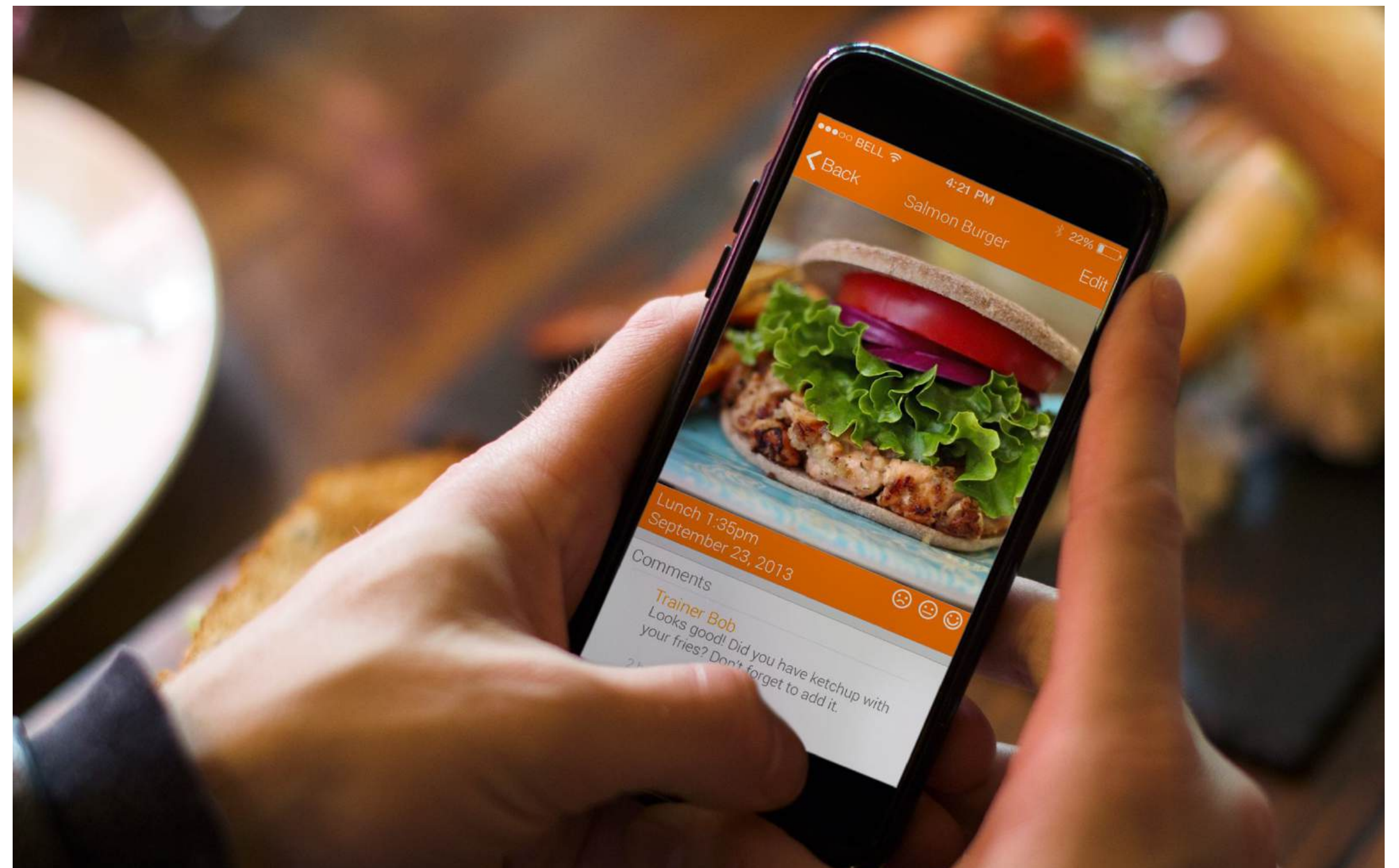
Diet Tracking App and Platform

Domain: Wellness

Technologies: Node.js, Express, PhoneGap, Angular, MySQL, AWS

ThinDish service provides an easy and reliable way to connect fitness trainers, dietitians, and physiologists with their clients worldwide. The platform offers white labeling system for corporate clients.

- User app: quick photo journaling, communication tools, push notifications, payments

- Each business can configure a custom branded iPhone app, Android app, and a website

- Back-office management panel gives administrator full control over users and groups management, payments processing, billings, and app customization
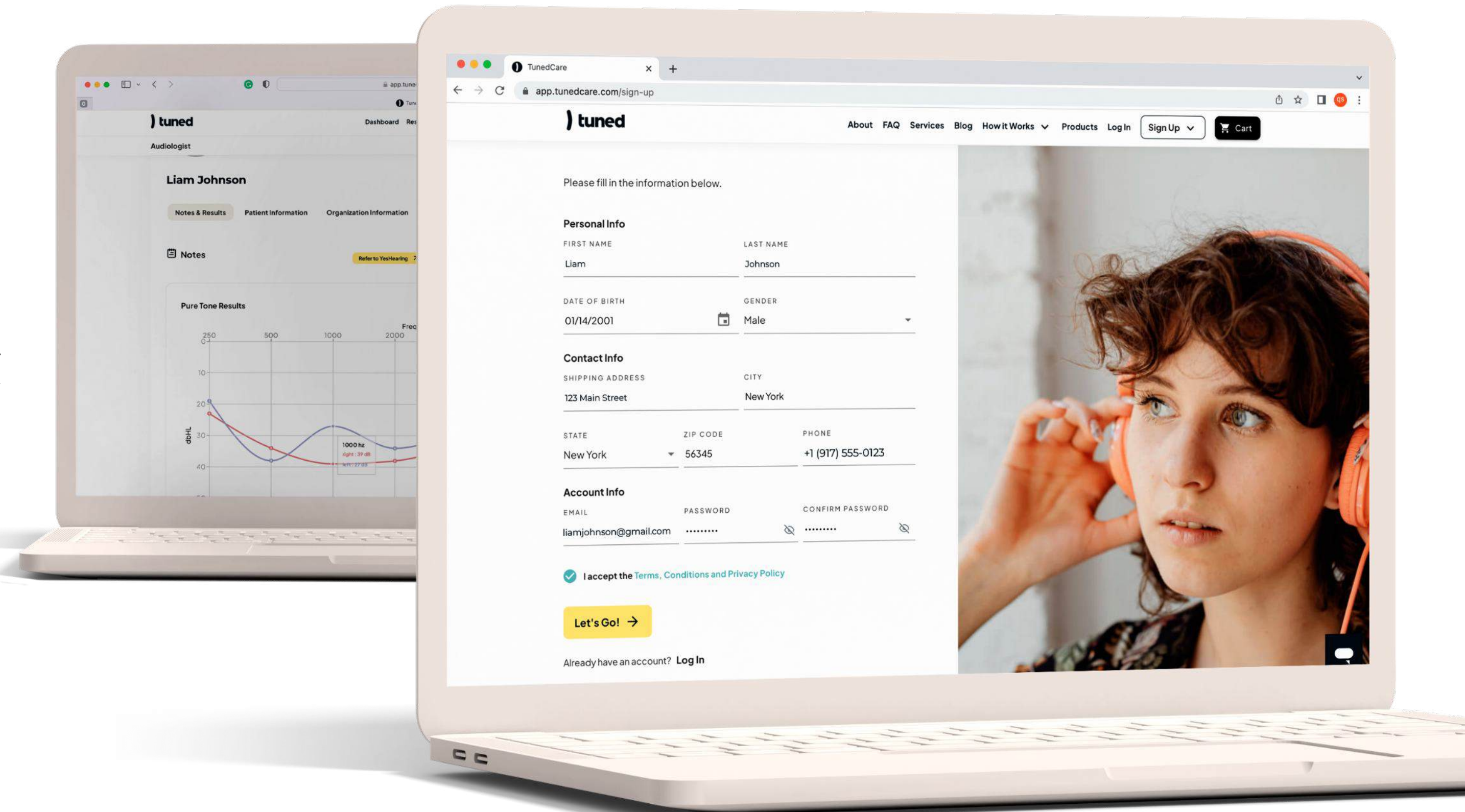
Hearing Health Platform

Domain: Healthcare

Technologies: Node.js, Express, React, Next.js, PostgreSQL, Bookshelf.js, Knex.js, AWS, Twilio, Tribe, Ecwid, Nylas, Stripe, Mailchimp

A service connecting qualified and credentialed audiologists to patients via a clinically validated platform.
Audiologists accurately screen patients' hearing online and offer guidance for further action.

- Audiologist: setup availability days and hours, view the list of patients and appointments, make notes for patients, study an audiology evaluation report

- Patient: choose an audiologist, book an appointment, communicate with the doctor

- Custom WebRTC video conference tool to hold sessions with patients

- 3 step hearing screener: the questionnaire, the digits in noise test, the pure tone test
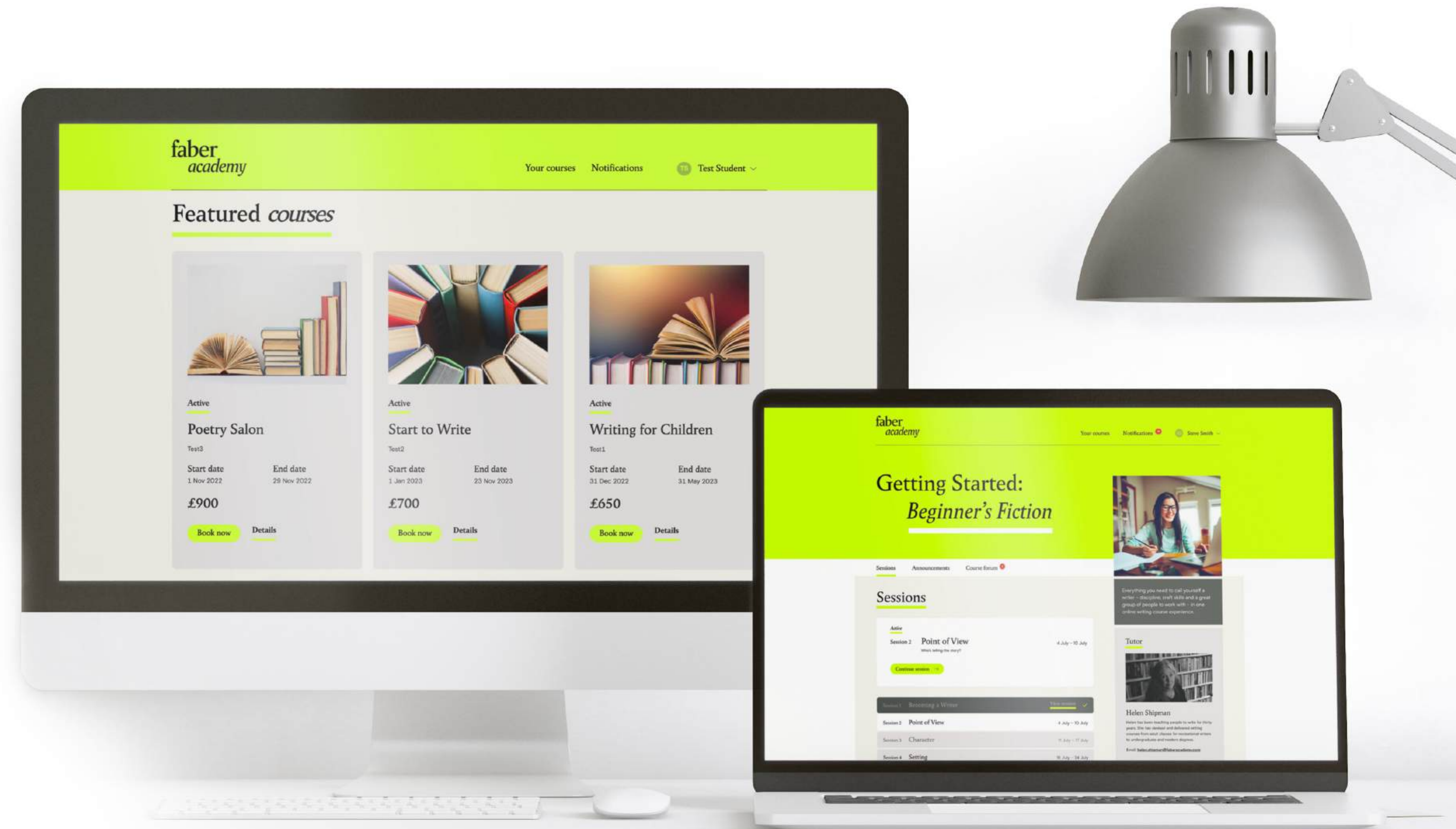
Custom LMS for Writing Courses

Domain: Publishing / Education

Technologies: React, PHP, Laravel, dotdigital, MySQL, AWS

Faber Academy is a creative writing school, one of the top UK providers of writing courses. Qualium Systems was hired to build a custom learning management system and help Faber create uniformly excellent experience across physical and online courses.

- Seamless integration of LMS with the main site allows students to navigate directly to the online classroom area after buying the course

- Upon selecting the course, a student gets access to video conferencing tools and learning materials including audio, video, documents

- Students use forums to post their works and get feedback / discuss it with tutors and other students

Wealth Management Platform

Domain: Fintech

Technologies: Node.js, Angular, Python, D3.js, C++, xIgnite, Stripe, PostgreSQL, AWS

Totum is a wealth management platform helping financial advisors create the best matching portfolio for their clients by providing a risk tolerance questionnaire and calculating individual Risk Score based on user data.

- Portfolio Risk Score calculated by analyzing the prospects of stocks and funds (over 200,000,000 of stock market historical data analyzed)

- Risk Tolerance Questionnaire is used to calculate the risk a person can take depending on the current life situation

- Public API allows for integrating the risk score calculation to other financial products

Chemical Plant SCADA System

Domain: SCADA

Technologies: C++, Qt, STL, Boost, XML, MySQL, Modbus TCP, JavaScript (ECMAScript)

The Chemical Plant system developed by Qualium Systems enables multiple operators to simultaneously control refinery processes. The system solves the problem of remote control of the plant devices (e.g., sensors) and getting full information about the current state of the system.

- Server app interacts with the HC900 unit using Modbus TCP protocol and MySQL server

- Client app: view sensors state, graphs, reports; switch output states and activate scripts; configure the system

- Application's advanced stability is achieved by introducing a secondary server and recovery utilities into the scheme

- Custom script module: switching states of the control unit digital outputs, smoothly changing the analog outputs, sending notifications, scripts parallel execution
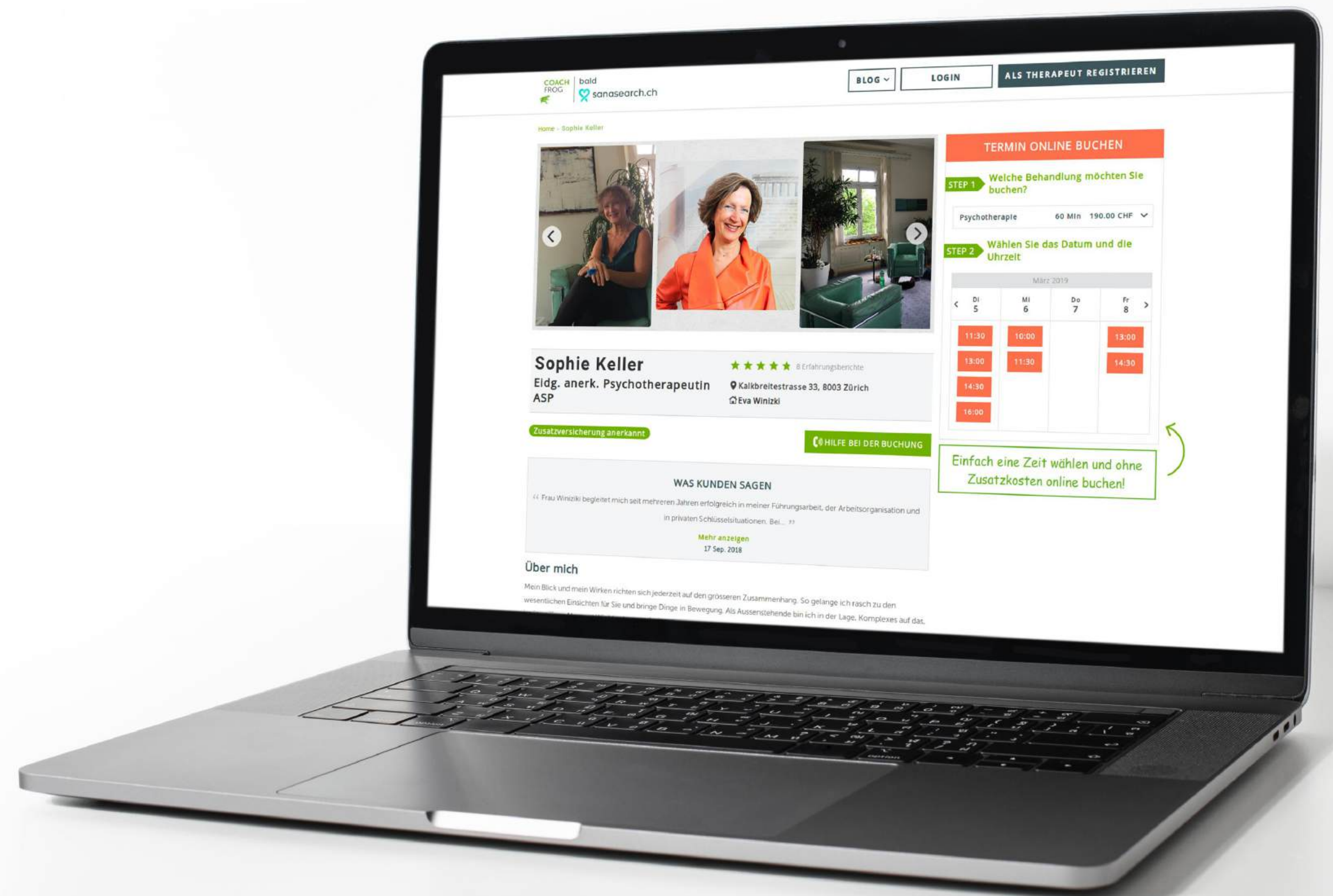
Online Platform for Therapists and Patients

Domain: Wellness / Healthcare

Technologies: Vue.js, Angular, Babel, Python, PostgreSQL

Sanasearch is the largest online therapy platform in Switzerland. Our team built a SaaS product allowing users to find qualified therapists in acupuncture, nutrition, massage, psychotherapy, as well as get valuable advice from holistic health experts.

- Thousands of experts in a structured catalog with advanced search and filters

- User review system

- Administrator verification for all coach profile data, including certifications and licenses

- Booking system to make appointments, view schedules, manage availability, and get notifications

Let's have a chat

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