Softvery SOLUTIONS

CASE STUDY

HEALTHCARE PROJECT

CLIENT

A medical device manufacturer making FDA-cleared devices for chronic knee pain (knee osteoarthritis).

Digitally enabling personalized treatment.

PRODUCT:

Knee osteoarthritis treatment
mobile apps

INDUSTRY:

Medical Devices

SPEED:

2 months - database optimisation
6 months - first MVP platform release

STATUS:

12 months - ongoing project

CLIENT *GOALS*

A medical device company approached Softvery Solutions to develop a digital platform for its FDA-cleared knee osteoarthritis treatment using biomechanical footwear technology.

Goals:

- Develop a digital platform to manage the processes related to biomechanical footwear technology.
- Build the ***solution from scratch*** as there was no existing architecture.
- Ensure the platform adheres to ***HIPAA*** and other healthcare regulations.
- Enable healthcare providers to monitor patient progress, adjust treatment plans, and see analytics.
- Allow patients to access their treatment progress, receive personalized guidance, and interact with healthcare providers.

PAINS TO SOLVE

The client needed a digital platform to streamline its knee osteoarthritis treatment and address the following challenges.

- Lack of any existing architecture to develop a comprehensive solution
- Lack of understanding on how to connect insurance requests for specific knee treatments by partnering clinics tailored to each patient's needs
- Implementing a robust authentication/authorization system to handle user roles and permissions across multiple clinics
- Lack of a clear implementation plan for assessment, monitoring, and reporting of treatment results
- Concerns around managing and optimizing database performance as patient datasets grew
- Achieving accurate gait analysis using smartphone sensor data for the patient app

OUR *SOLUTION*

We began with comprehensive consulting to understand the client's needs, followed by workshops to determine the most suitable technologies and architecture.

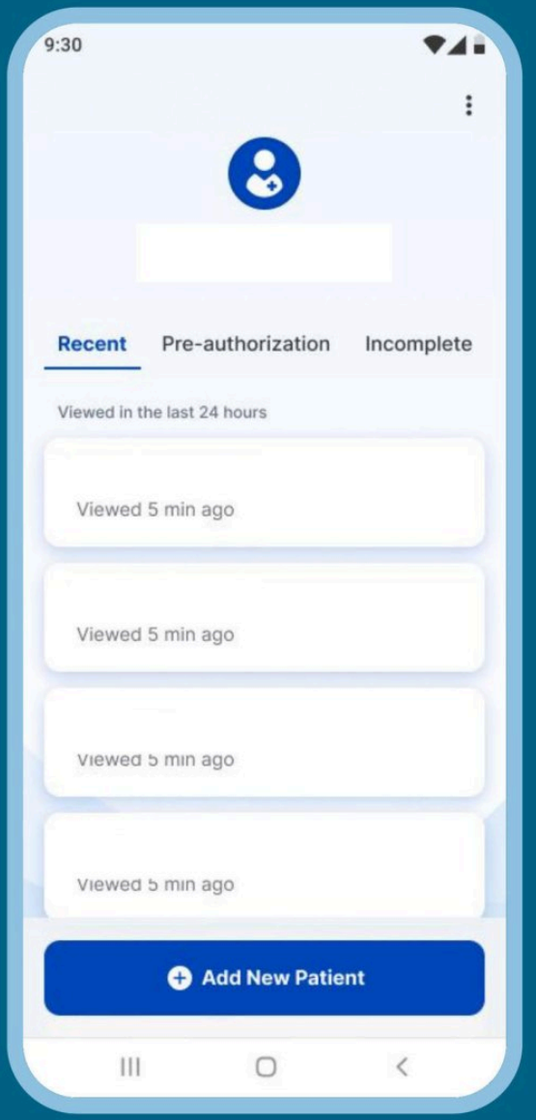
Our solution included:

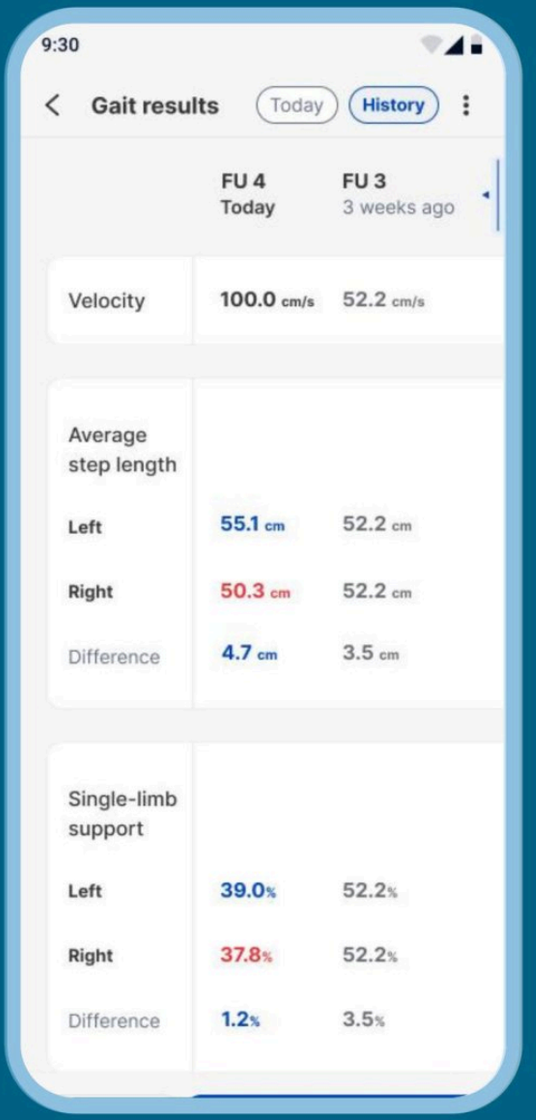
- A platform to perform ***clinic and patient management,*** control gait tests and perform analysis
- Hosted on a secure cloud database ***designed for HIPAA requirements***, built from the ground up
- Seamless ***integration*** of insurance approval processes, clinic data, and personalized treatment plans
- ***Patient gait analysis*** via the patient app, with data shared to clinicians
- Powerful ***analytics engine*** allowing clinicians to leverage advanced metrics
- Transparent flow from ***insurance requests*** to tailored questionnaires and device settings

THERAPIST APP

A healthcare provider app designed for HIPAA requirements, enabling clinicians to manage patient profiles, customize treatment plans and use analytics.

- Create detailed patient profiles
- Customize device settings based on gait analysis data
- View patient reports and monitor treatment progress

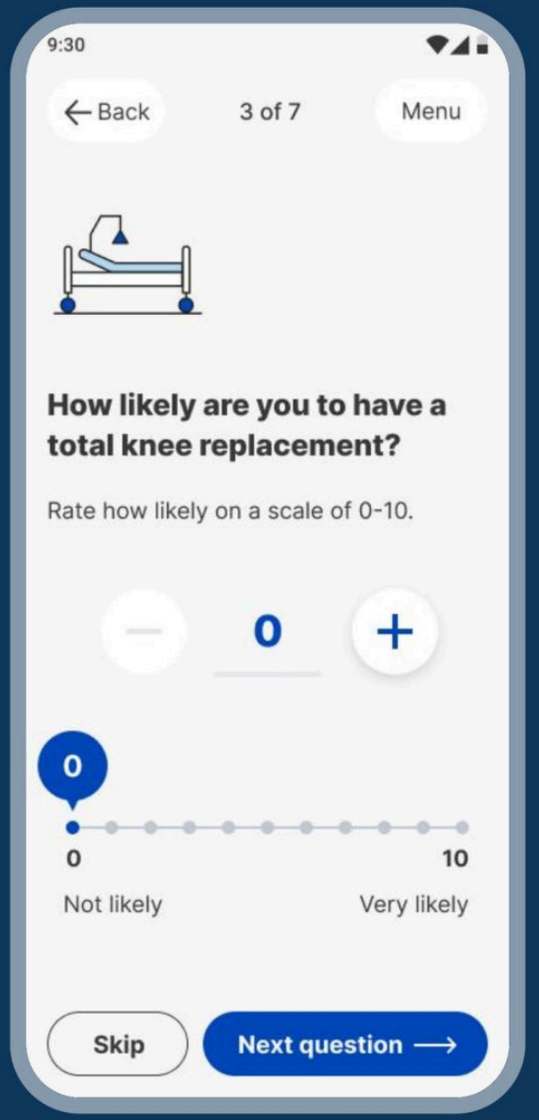


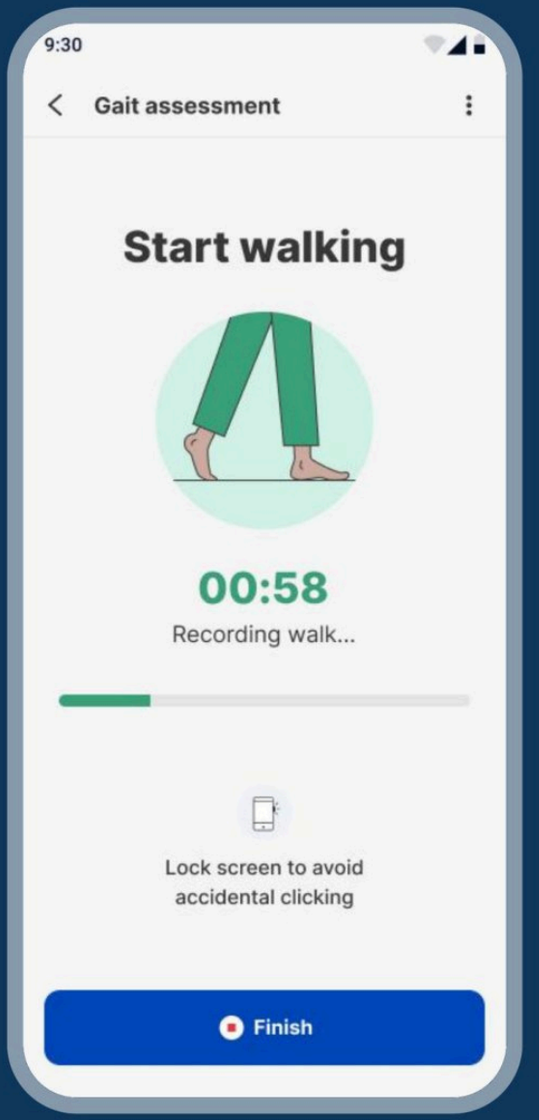


PATIENT APP

An application allowing to complete assessments, perform gait tests at home, and monitor progress.

- Complete condition assessment questionnaires
- Perform gait tests at home using phone sensors
- Track improvement and compliance





ADMINISTRATIVE CONSOLE AND ANALYTICS ENGINE

A comprehensive platform to manage patient visits, data, clinics, and access control. Gain data-driven insights.

- → Patient visit management, patient data management, clinic management, and clinic data management.
- → Feature control for clinics, doctor data management.
- → Creating new users and assigning user roles.

RAPID DELIVERY USING *AGILE METHODOLOGY*

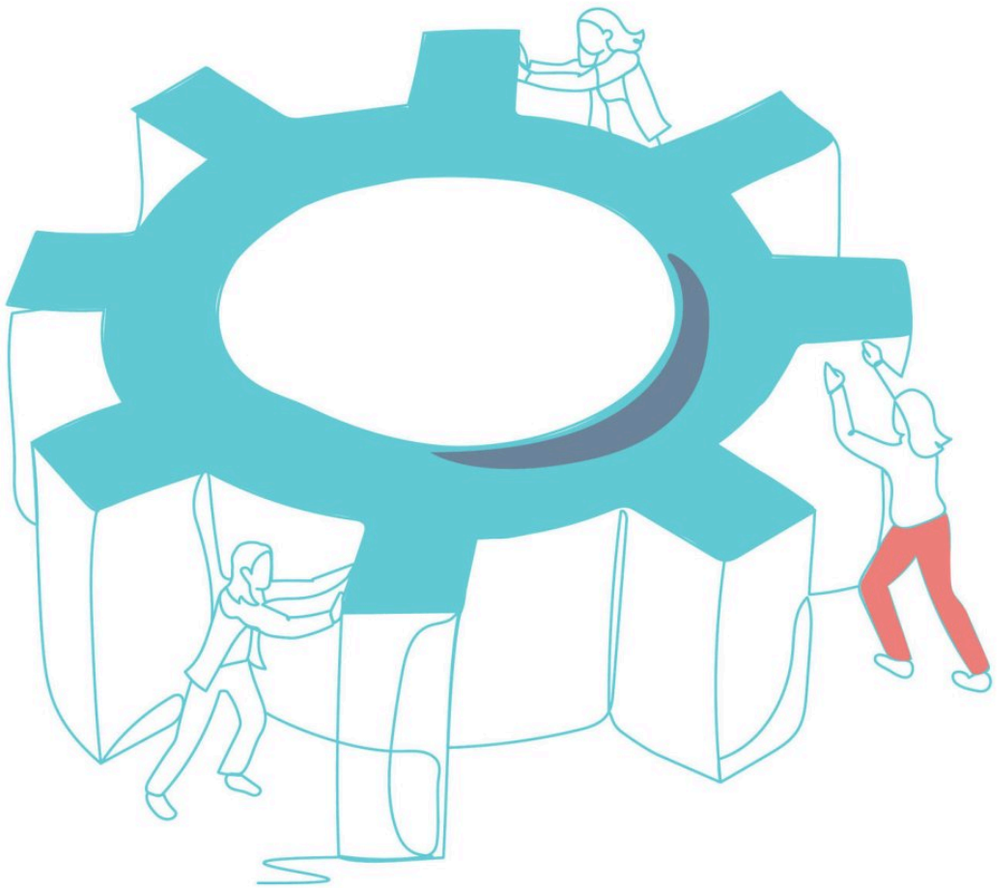
Initial consultation, brainstorming, and collaborative workshops

Scrum with 2-week sprints

Daily standups and regular demos

Continuous feedback & retrospectives

CORE *TEAM*



3 Front-End Developers

2 Back-End Developers

1 DevOps Engineer

1 QA Engineer

1 Project Manager

TECHNOLOGIES USED

Tech Stack

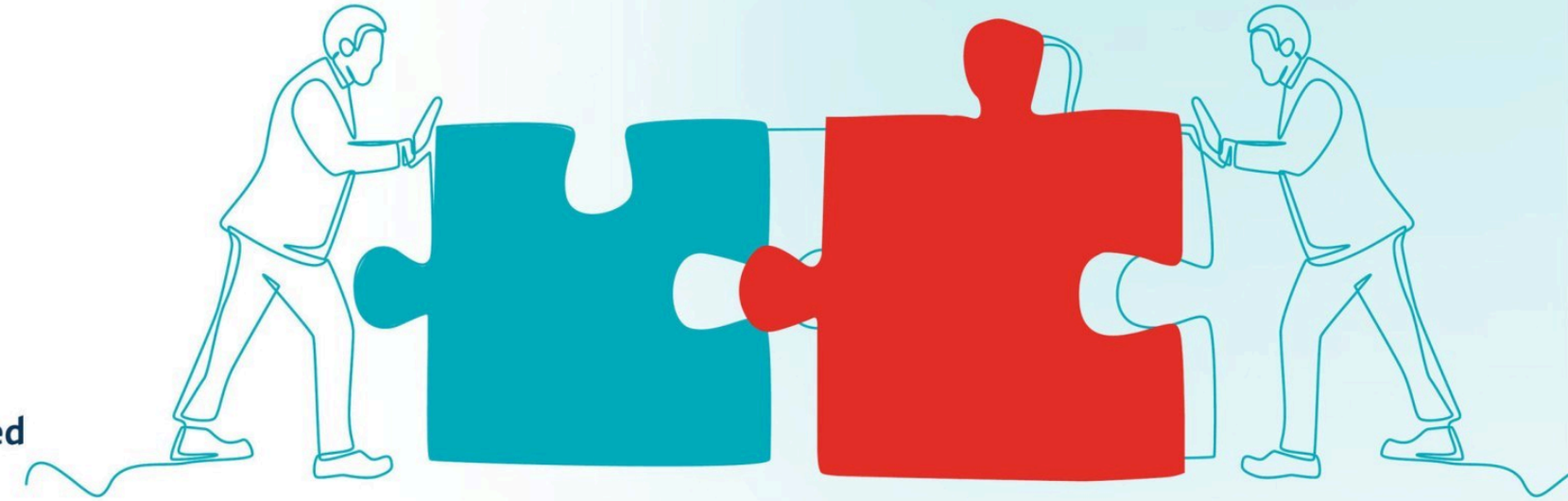
- **Front-End:** React, React Native (native bridge modules in Java and Swift), TypeScript
- **Back-End:** Java, Spring Boot
- **Database:** MongoDB Atlas

DevOps Ecosystem

- **GitLab CI/CD pipelines**
- **Migrated from Jenkins to ArgoCD for CI/CD**
- **Tekton for GitOps**
- **Vector for log aggregation**
- **Docker containerization**
- **Nexus repository manager**
- **Kubernetes deployment**

KEY *CHALLENGES*

- → Multi-clinic role-based access
- → Seamless app & database integration
- → Gait analysis using phone sensor data
- → Database indexing and optimization
- → Cloud architecture designed for HIPAA requirements
- → Ongoing management and support needed



DEVELOPMENT TIMELINE

Initial phase (3 months)

- Optimized database performance and indexed logs
- Developed an MVP for initial testing

Core Development (3 months)

- Built the primary application for clinicians
- Clinician portal to manage patient information, prescriptions, and gait analysis
- Transitioned CI/CD pipelines from Jenkins to ArgoCD (took 2.5 months)

Phase 3 (3 months)

- Built the primary application for patients
- Patient portal for completing surveys and inputting personal data
- Integrated the two applications to share data between them
- Established connection to backend systems for warehouse order processing

Phase 4 (3 months)

- Implementing Nexus as the repository manager
- Containerizing with Docker
- Adding advanced reporting and analytics capabilities
- Post-launch maintenance and ongoing support
- Further enhancements as the project is still going

Phase 5 (till now)

- Releases of the planned features
- Further enhancements
- Bug fixing
- Post-launch maintenance and ongoing support

3 months | 6 months | 9 months | 12 months | Nowadays

Softvery
SOLUTIONS

Great for patients, amazing for your growth.
That's what Softvery is here for. Let's talk!

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