PRODUCT BUILD | QA | UX | APPLICATION MODERNIZATION

Major Property Rental Provider

How We Helped a Leading $4B+ U.S. Rental Home Provider Build a Hybrid Mobile Platform Without Rewriting Their Entire Web System

Our client is one of the largest single-family rental home providers in the United States, managing tens of thousands of homes across dozens of states. The company serves a huge population of residents and relies heavily on digital tools to support leasing, maintenance requests, payments, and everyday property management.

They had already invested years into a modern React-based micro-frontend web platform; a sophisticated, modular system powering the majority of their resident-facing experience.

As they expanded their digital services to mobile, they initially believed they would need to rebuild everything from scratch, creating a full native mobile experience separate from the web. This would significantly increase cost, code duplication, long-term maintenance, and delivery timelines.

They approached gravity9 to help them find a smarter way, given our background in hybrid mobile architectures and complex frontend ecosystems, gravity9 was tasked with designing a future-proof mobile solution that balanced performance, reuse, and long-term sustainability.

Utilized Technology Stack

Cross-platform mobile: .NET MAUI

Web micro-frontends: React

Cloud identity: Azure B2C / OpenID Connect

Native integrations: Bluetooth + smart-lock hardware

Core languages: C#, .NET, TypeScript

Review of Challenges

Although the client's existing system was powerful, expanding it into a mobile application brought a unique set of challenges most of them related to architecture and long-term maintainability rather than pure development effort.

Key challenges included:

- Avoiding double work: Not wanting to maintain two separate versions of the same features (web and mobile).
- Integrating web micro-frontends inside a mobile app, something few companies attempt at enterprise scale.
- Keeping authentication consistent across both platforms with a single sign-on model.
- Bringing device-level features (Bluetooth, smart locks, native navigation) into a system primarily built for the web.
- Maintaining performance when mixing two very different technology stacks.
- Ensuring future maintainability for a hybrid approach still uncommon in the industry.

Solving these challenges required deep exploration, architecture validation, and rapid prototyping before any long-term development could begin.

Our Solution

gravity9 designed a hybrid mobile architecture that offers the best of both worlds:

- Reuse the client's existing micro-frontends directly inside the mobile app
- Add native components only where required, such as authentication, navigation, and Bluetooth communication
- Avoid rewriting large parts of the platform, dramatically reducing cost and delivery time

This approach allowed the client to keep the speed and flexibility of their web platform while gaining the performance and capabilities of a native mobile app. The result is a unified digital experience, where:

- Residents see the same UI patterns across web and mobile
- Developers maintain a single set of frontend logic
  - Native device features appear seamlessly where needed

Our Approach

gravity9 followed a structured, iterative process to ensure accuracy, speed, and stakeholder confidence:

1. Discovery and Feasibility Analysis

We mapped out the hybrid integration model and confirmed where reuse vs. native development made the most sense.

2. Rapid Prototyping (Delivered in the First Month)

A working prototype validated that React micro-frontends could run inside the mobile container and interact with native modules.

3. Iterative Development (Ongoing)

We are now layering:

- native authentication flows
- unified navigation
- Bluetooth/smart-lock integrations
- a communication bridge between web components and native APIs

This approach ensures measurable progress with low risk and high transparency.

Subsequent Outcomes

Even in the early stages, the project has already delivered several high-value outcomes:

- A fully working hybrid architecture that proves web micro-frontends can run smoothly inside a native mobile shell
- Verified Bluetooth/smart-lock integration through native modules
- Consistent navigation model that blends native and web-driven screens
- A communication bridge allowing web components to securely call mobile APIs
- A maintainable delivery model that eliminates code duplication and accelerates future releases

This establishes a scalable, modern mobile foundation while protecting the client's existing investment in their web platform.

Client Feedback

Early client feedback has been really positive. Stakeholders praised:

- The clarity and simplicity of the proposed hybrid architecture
- The speed at which gravity9 delivered a working prototype
- The ability to integrate advanced mobile capabilities without rewriting their entire frontend platform

Approval in May confirmed strong confidence in the direction and collaboration.

"We reused existing web micro-frontends inside a native mobile app, adding native features only where they mattered."

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