

Case Study

NFC-Enabled Cross-Platform Smart Insulin Pen App Development

Digitizing insulin pen data management with Flutter and native SDK integration.



PROJECT OVERVIEW

A Denmark-based healthcare provider partnered with Rishabh Software to build a cross-platform smart insulin pen app. The solution unified NFC scanning and dosage sync in one mobile app, replacing multiple native builds. It delivered secure, scalable insulin data management, validated Flutter for regulated healthcare, and laid the foundation for the client's smart-device ecosystem.



Capability

Mobile App
Development



Industry

Healthcare



Country

Denmark, Europe

KEY FEATURES

We developed a cross-platform smart insulin pen app using Flutter, which enabled seamless synchronization and simulation of medical device data. The solution was designed to simplify complex workflows while ensuring scalability, usability, and maintainability. Key features of the solution include:

NFC-Enabled Insulin Pen Integration

Our team implemented NFC-based device scanning for direct, real-time device connectivity. This integration improved accuracy of dosage capture and reduced manual logging errors.

Real-Time Dose Log Preview

We introduced a dedicated module to preview the device dosage history in real time, allowing users to review past insulin doses easily. This feature empowered users to make informed decisions and improved overall smart insulin pen app usability.

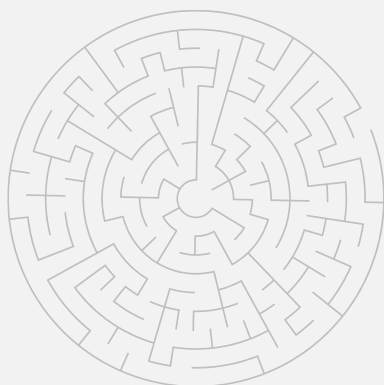
Simulator-Driven Workflow Testing

To support development and testing, we built a simulator-driven workflow that replicates key app functionalities without requiring native SDKs or hardware. This allowed for rapid iteration, demonstration, and validation, ideal for early-stage development and client reviews.

Multi-Flavored Build Setup for Global Scalability

We enabled a multi-flavored build setup to support localization and deployment across different environments. This made the insulin pen adaptable for future international expansion and varied clinical use cases.

CHALLENGES



- Frequent changes to the native SDK and simulator disrupted development schedules and risked integration failures.
- Limited availability of updated simulator builds slowed workflow validation and feature testing.
- Lack of a self-service build process forced dependence on external help for generating app bundles/IPAs.
- Sparse error monitoring increased the chance of undetected bugs during real-world usage.
- Shifting requirements and fragmented communication created alignment gaps and delayed approvals.

SOLUTION

We designed and developed a cross-platform smart insulin pen app built with Flutter and guided by clean-architecture principles. The goal was to streamline the synchronization of sensitive medical device data. This enabled the client to independently demo the workflow to senior stakeholders, accelerating buy-in for future digital insulin delivery solutions. To accomplish this, our team executed these key initiatives:

End-to-End NFC and Data Automation

Engineered an end-to-end workflow covering device selection, scanning, dosage tracking, and log preview. By simulating these functions, the solution allowed seamless demonstrations of the process without requiring a physical device or SDK dependencies.

Scalable App Architecture with Error Handling

We implemented a Bloc pattern-based architecture supported by localization, flavor setup, and Firebase Crashlytics.

Flutter Plugin Development and SDK Integration

Our team created a dedicated Flutter plugin to interact with the native SDK while also building a mock platform implementation.

CI/CD Automation for Future Releases

To streamline the ongoing development of the cross-platform smart insulin pen app, we integrated a robust CI/CD pipeline.

TECHNOLOGIES & TOOLS



Outcomes

100%

demonstrable proof of concept without device dependency

60%

faster release cycles through CI/CD automation

75%

improvement in developer self-sufficiency with independent build setup

ABOUT RISHABH SOFTWARE

As a Digital Engineering and Enterprise Transformation leader, we empower businesses to scale, innovate, and thrive in today's digital-first world through technology rooted in trust and transparency. We leverage emerging capabilities such as Cloud, Data Engineering & Analytics, AI, Automation and Application Engineering to drive digital transformation and unlock new opportunities. We have successfully served across 25+ countries, and we work towards customer delight as "WE CARE."

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