

Case Study

IoMT Digital Health Platform



Case Study – IoMT Digital Health Platform

Clinical Problems



Adherence

Only about 50% of patients adhere to medication.



User Engagement in Clinical Trials

80% trials delay due to recruitment and setup access. Then, 30% drop out. Adherence rate is around 43-78%.



Regulatory

FDA, HIPAA, HITRUST, etc.



Scale

IT infrastructure is difficult to scale (time, cost and technology limitations) to catch up with business growth



Data Availability

For providers and patients on patients' actions, quality, outcomes.

Case Study – IoMT Digital Health Platform



Customer Overview

Client is an American multinational technological manufacturer in Fortune 500. The company has manufacturing operations in over 40 countries with revenue around \$25B and 200K employees.

They establish a brand-new start-up company to build an **IoMT Digital Health Platform** for Biopharma and Medtech.

Business outline:

- The platform is a device-agnostic digital health platform which is scalable, cost-effective (reduce upfront expense and maintenance costs) while ensuring compliance on security and privacy regulations.
- MedTech and Pharma companies can leverage the platform to build their end products/services, for example to support patient health monitoring, encourage patient engagement for better outcomes.
- A complete product for a customer consists of client's **cloud** (APIs, data storage, report/data analytics), web apps for doctors and manufacturer, mobile apps for patient and the customer **smart medical devices** (smart insulin pen, smart inhaler, smart thermometer, smart sphygmomanometer...)

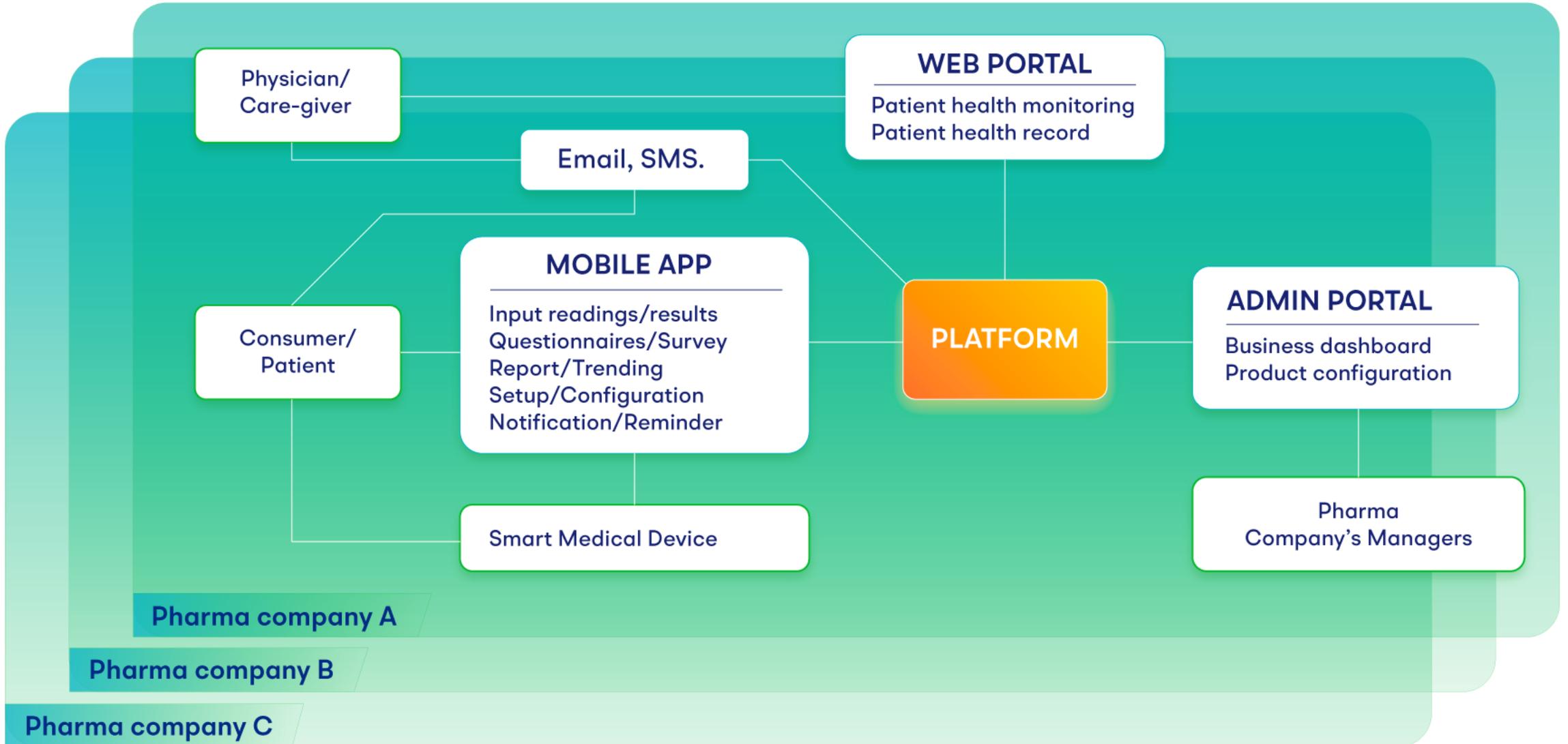
Engagement with Client

- For over 5 years, we have been the biggest vendor to provide consulting service and full lifecycle development service for the client
- **Built up a big team of 80 people just after few months.** Constantly maintain a team of 60-100 engineers globally (VN, India, Canada, Colombia)
- Strictly follow multiple regulations & processes including HIPAA, HITRUST, FDA Design Control, GDPR
- Helped the client to gain big customers in the industry.
- 10 products/systems developed based on the platform has gone live for different customers

What FPT Offers

- FPT provided full life-cycle IT services for client:
 - Technology consulting and Architecture design
 - Lots of POC/MVP for different technology and initiatives
 - Develop new and customize core platform following Design Control process
 - Build new web applications, design reports/dashboard, mobile apps.
 - DevSecOps
 - QA Service: Validation & Verification following Design Controls process
 - Automation Test
 - SRE 24/7 Maintenance & Support

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Platform Usecase: Virtual Care for Diabetes Patients

Challenges:

- Rise in number of diabetes patients (108 mil in 1980 to 422 mil in 2014)
- 95% of Type 2 diabetes care treatment is managed by the patients themselves.
 - > Patients fail to achieve adequate glycemic control
 - > Healthcare professionals lack of accurate information on how patients manage their illness

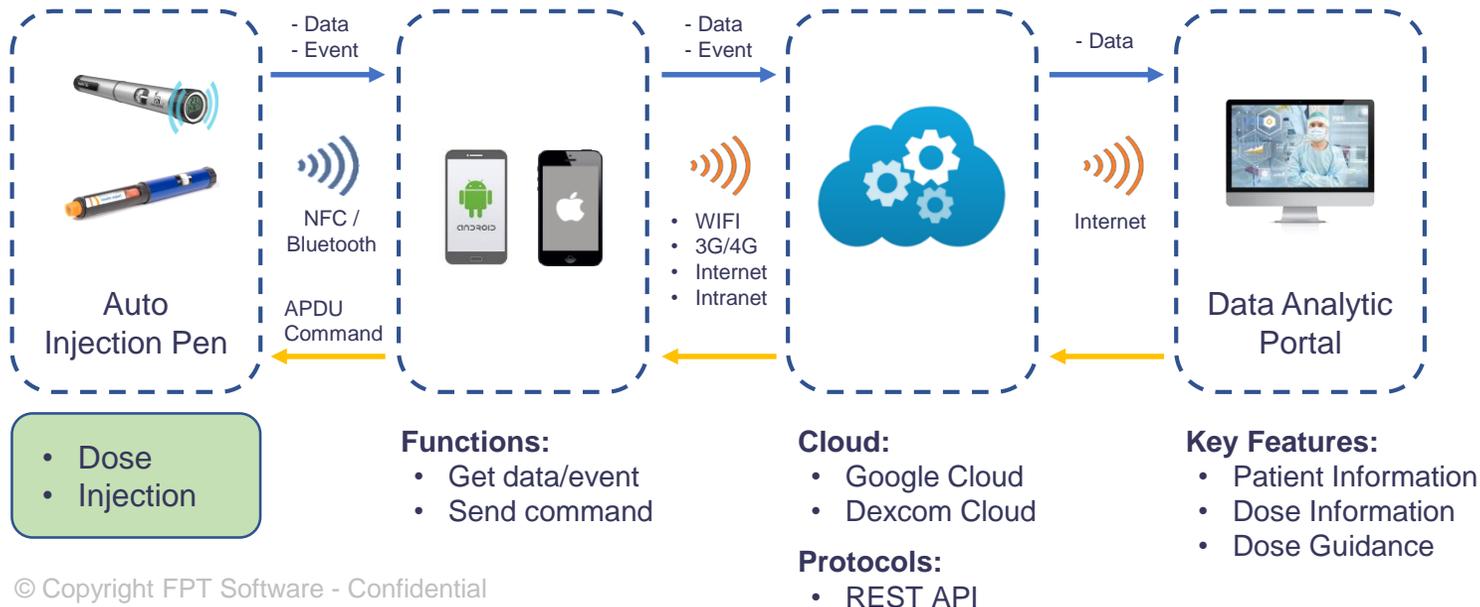
Solutions:

FPT built a centralized digital health platform that:

- Capture the dose of insulin injection from digital insulin pen
- Monitor continuous blood glucose meters from third party diabetes solutions

=> Patients & healthcare professionals can monitor patients' health condition

It is a complete solution for end users including smart device, embedded software, mobile app, web portal and data platform.



- Use NFC, Bluetooth to communicate with medical devices
- Kubernetes, NoSQL, SQL server for more flexible and available services to host web application
- Redis for High Availability of the server
- Selenium for automation testing
- JMeter for performance test both UI and API

Platform Usecase: Self-Reported Ophthalmic Data

Problems:

Issues in Researches and Clinical Trials in Ophthalmology

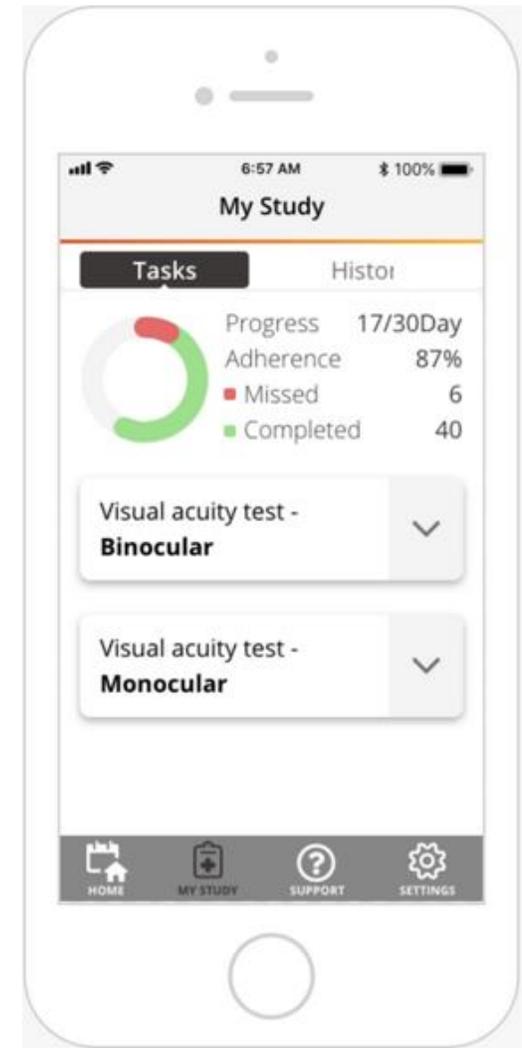
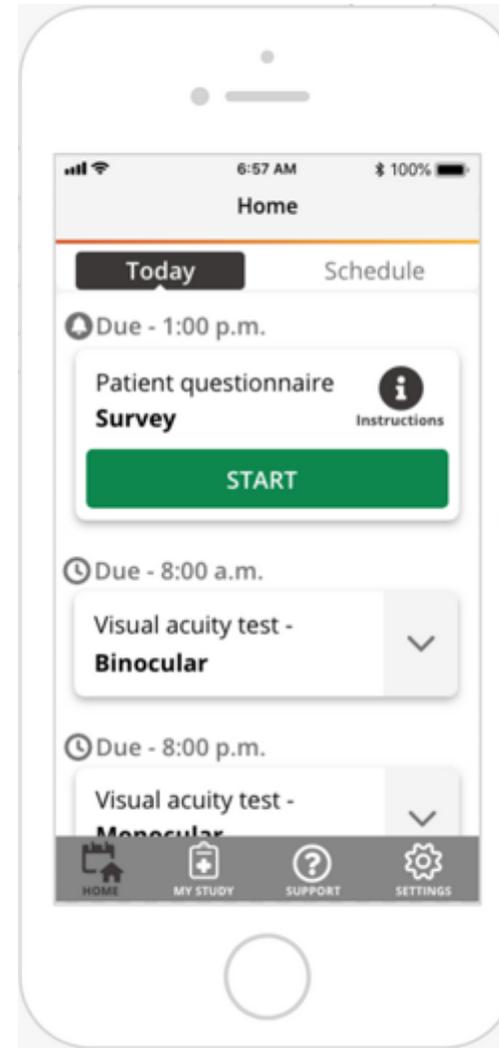
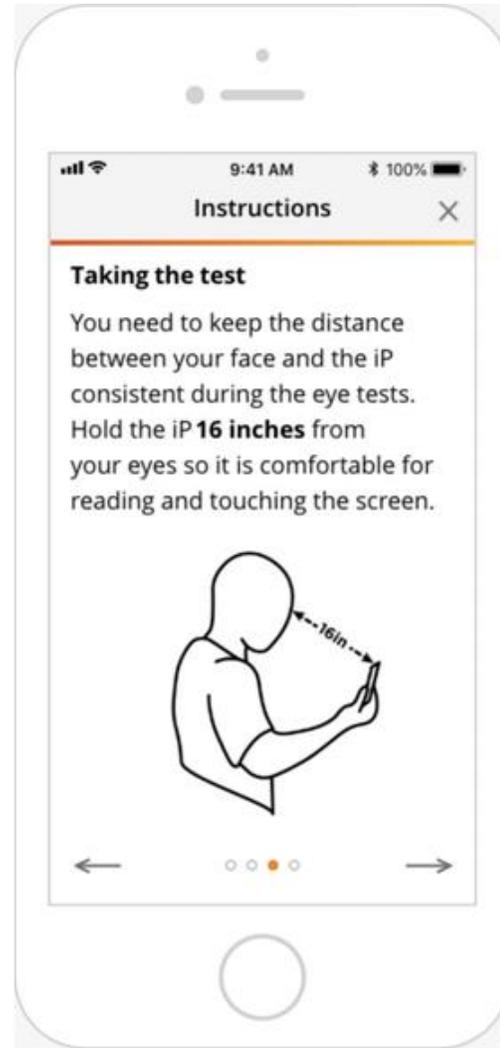
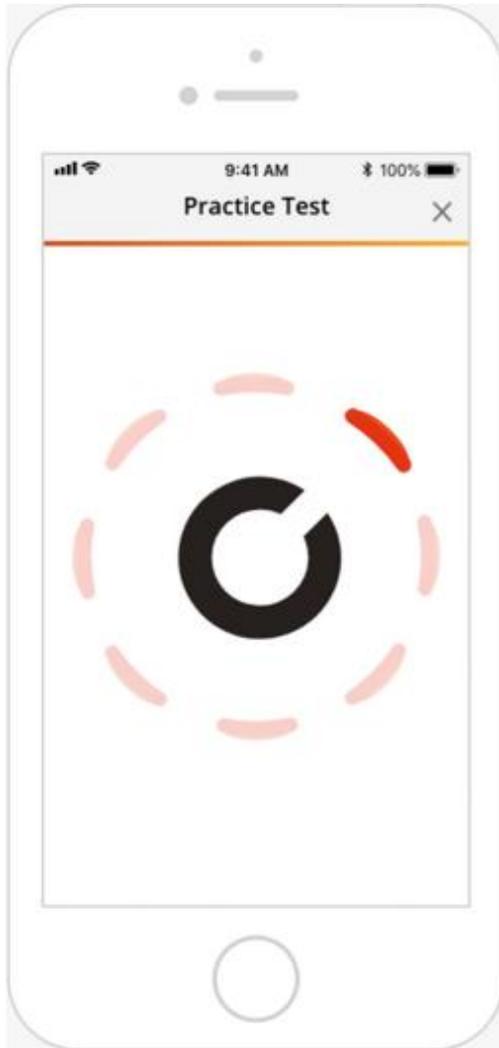
- Low participation. Lack frequency and integrity of data.
- Current data capture methods are not flexible and not suitable for patients time. So data may not correctly reflect real world patient experiences.

Solutions:

- Mobile application allows patients to self-report data by taking assessments like visual acuity and contrast sensitivity tests, gain feedback on their visual function. No complex equipment or accessories is needed
- Web portal provides researchers with a greater volume of realworld, patient-reported data, creating more flexible and accessible clinical trial designs.
- Integrate with Apple ResearchKit platform, the vision tests are available to the scientific community



Platform Usecase: Self-Reported Ophthalmic Data



Platform Usecase: Chronic Disease Management

Problems:

Chronic disease rates are on the rise

Chronic disease is the leading causes of death and disability and the leading drivers of US's \$3.8 trillion annual health care costs.

Patients with chronic illness need to have their health monitored on a daily basis in a long period of time. Therefore, physical visit to hospital will be a burden

After patients are discharged from hospitals, the hospitals lose connection to the patients.



Solutions:

Build a disease management platform that focus on chronic disease including asthma, heart failure, diabetes, etc

It aims to improve patient engagement and therapy adherence, as well as empowering healthcare providers with better insights to deliver more personalized care in real-time.



Mobile app for Patients:

- Daily/weekly reminders of taking self-test.
- Record test result
- Display related content: air quality, humidity, pollen, etc.
- Integrate with hospital EMR system
 - Book appointment. Reminders
 - View ePrescription. Setup reminders to take medicine.
- Direct communication channel with doctors and caregivers

Web portal for Doctors:

- Manage patients
- Viewing patients health condition index, viewing alerts (configurable)
- Support hosting Study program

Platform Usecase: Chronic Disease Management

11:06

Good morning, D

Daily Log

How do you feel today?
Tap on a face below (required)

Bad Okay Good

Enter Daily Log

Air Quality [View more](#)

76
Good

Current Location UK

Home My Plan Trends Messages Settings

11:10

Home Daily Log Customize

Wed 08 Thu 09 Fri 10 Sat 11 Today

Daily Log - Submitted

How you felt [Edit](#)

Bad Okay Good

Symptoms [Edit](#)

You reported 1 symptom.

Chest congestion

Triggers [Edit](#)

You reported 1 trigger.

Pollution

Medications

Record medications you have taken today.

[Add medications](#)

Home My Plan Trends Messages Settings

9:38

My Plan LEVOTHYROXINE

LEVOTHYROXINE (SYNTHROID, LEVOTHROID) 25 MCG TABLET



Instructions

Take 1 tablet (25 mcg total) by mouth every morning.

Medication Reminder

7:00 PM Daily

[Manage Reminders](#)

[Learn more about this medication](#)

[Report an adverse event](#)

Home My Plan Trends Messages Settings

2:10

Home Appointments

[Clinic Website](#)

All Appointments

Jul 10 FRI 12:15 AM Immunizations Only John Adam

Jul 17 FRI 11:35 PM Consultation John Adam

Jul 20 MON 11:25 PM Consultation John Adam

Aug 18 TUE 11:15 PM Consultation John Adam

Home My Plan Trends Messages Settings

3:35

Trends

Daily Weekly

Sep 20 - Sep 26

Weight [View Details](#)

Lowest 43 lbs Highest 123 lbs

Blood Pressure [View Details](#)

Systolic

Lowest 321 mmHg Highest 666 mmHg

Diastolic

Lowest 33 mmHg Highest 88 mmHg

Heart Rate [View Details](#)

Lowest 12 bpm Highest 99 bpm

Home My Plan Trends Messages Settings