

**THOUGHT**  
MOBILE TECHNOLOGIES

[www.thoughtmobiletech.com](http://www.thoughtmobiletech.com)

FROM QUESTIONS TO BREAKTHROUGHS

# Full Stack Software Development with focus on Embedded Systems



# WHO WE ARE



**Thought Mobile Technologies**, founded in 2019, is a cutting-edge technology company specializing in **innovative IoT products** and **full-stack software solutions**. With expertise in **embedded systems**, **HMI applications**, and **enterprise-grade IoT ecosystems**, we help businesses thrive in today's connected world.

Our solutions are designed to **simplify processes**, **enhance user experiences**, and tackle **real-world challenges** across industries. Since our inception, we have been committed to delivering **secure**, **scalable**, and **smart technologies** that drive innovation and growth.

# SOLUTIONS

## IoT Solutions

- Industrial IOT
- HealthCare IOT
- Smart Home
- Wearable

## Web App Development

- Enterprise Web Systems
- Digital Asset Management
- Portal Development
- AI/ML Apps

## Embedded Systems

- Firmware
- Middleware
- Connectivity
- Apps & HMI's

## Mobile Apps & Backend

- Enterprise Mobile Apps
- Smart Devices & Wearables
- Consumer Apps/Cloud Apps

## HMI Development

- HealthCare HMI
- Industrial HMI
- Food & Beverages HMI
- Automotive HMI

## UI/UX Design

- Product Design
- User Research
- Interface Design
- Prototyping

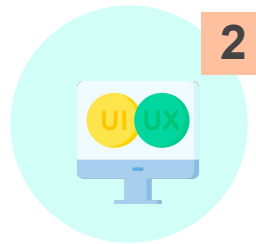
# OUR PROCESS



1

## Requirement Gathering

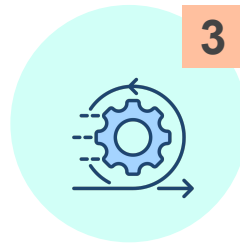
We start by understanding your app idea, business goals, and target audience.



2

## UX/UI Design

Our In-house team of designers translate requirements into user friendly design solution.



3

## Agile Development

Once the design is finalized, development starts with agile methodology, with regular progress updates.



4

## Testing & Deployment

Our dedicated quality assurance team performs rigorous testing and quality checks throughout the development process.



5

## After Launch Support

Comprehensive post-launch support, including analytics and user feedback analysis.

# TECH SKILLS

## **Mobile App Development**

Flutter, Swift, Java, Kotlin, React Native

## **Web App Development**

React, Angular, Javascript, Python, Php, Laravel, HTML, CSS, Bootstrap, Material-UI

## **Backend Development**

NodeJs, Express, Spring Boot

## **IOT Protocol**

MQTT, WebSocket, BLE, WIFI, LoRaWAN, Zigbee & HTTP/HTTPS

## **Cloud and Deployment**

AWS, Azure, Google Cloud, Docker, Kubernetes

## **DevOps**

Jenkins, CircleCI, Travis CI

## **Database**

MySQL, MsSQL, PostgreSQL, MongoDB, Firebase, Supabase

## **IOT**

Raspberry Pi, Arduino, ESP32, ESP8266, NXP, Quectel and Sensors & Cloud IOT

## **Other Technologies**

API: GraphQL, RestFul API's



# Product Engineering & IoT Solutions

## End-to-End Hardware & Software Development

- Tailored for: Retail, Healthcare, Smart Automation, Audience Measurement
- Full-cycle support: Concept → Prototype → Deployment

## Core Capabilities

- **ID & Board Design:** SolidWorks, ARM/MIPS/x86 SoCs
- **MCU-based Systems:** STM, ESP32, Atmel, Microchip
- **OS Integration:** Android AOSP, Yocto Linux
- **Drivers & BSP Customization**

## Manufacturing Support

- Box Build, Testing, Firmware Preload
- Production-Ready Hardware Kits

## IoT Solutions & System Integration

### Smart, Connected Ecosystems

- **Device Connectivity:** Wi-Fi, BLE, 4G, MQTT-based protocols
- **Real-Time Data Exchange:** Sensor data collection, edge control
- **Cloud Integration:** AWS, Azure & OTA
- **Remote Monitoring & Control:** Custom dashboards, alerts, rule engines

### Use Cases

- Food & Beverages vending machines
- Smart Retail Terminals & POS
- Home & Industrial Automation
- Connected Medical Devices
- Asset Tracking & Telemetry

# OUR WORK



# Industrial Projects



# Industrial Smart Cooker HMI Application

## Hardware

- Android 10 **AOSP** Board, customized for industrial use
- Integrated **Quectel SC200R** smart IOT module
- **UART** serial interface with cooker control PCB
- 7" & 10" capacitive touch screens with industrial-grade responsiveness
- Communication: UART (cookers), Wi-Fi & 4G (cloud & OTA updates)
- Controller board managing 3 independent cookers simultaneously
- Relay-controlled heating, with embedded temperature & safety sensors

## Software

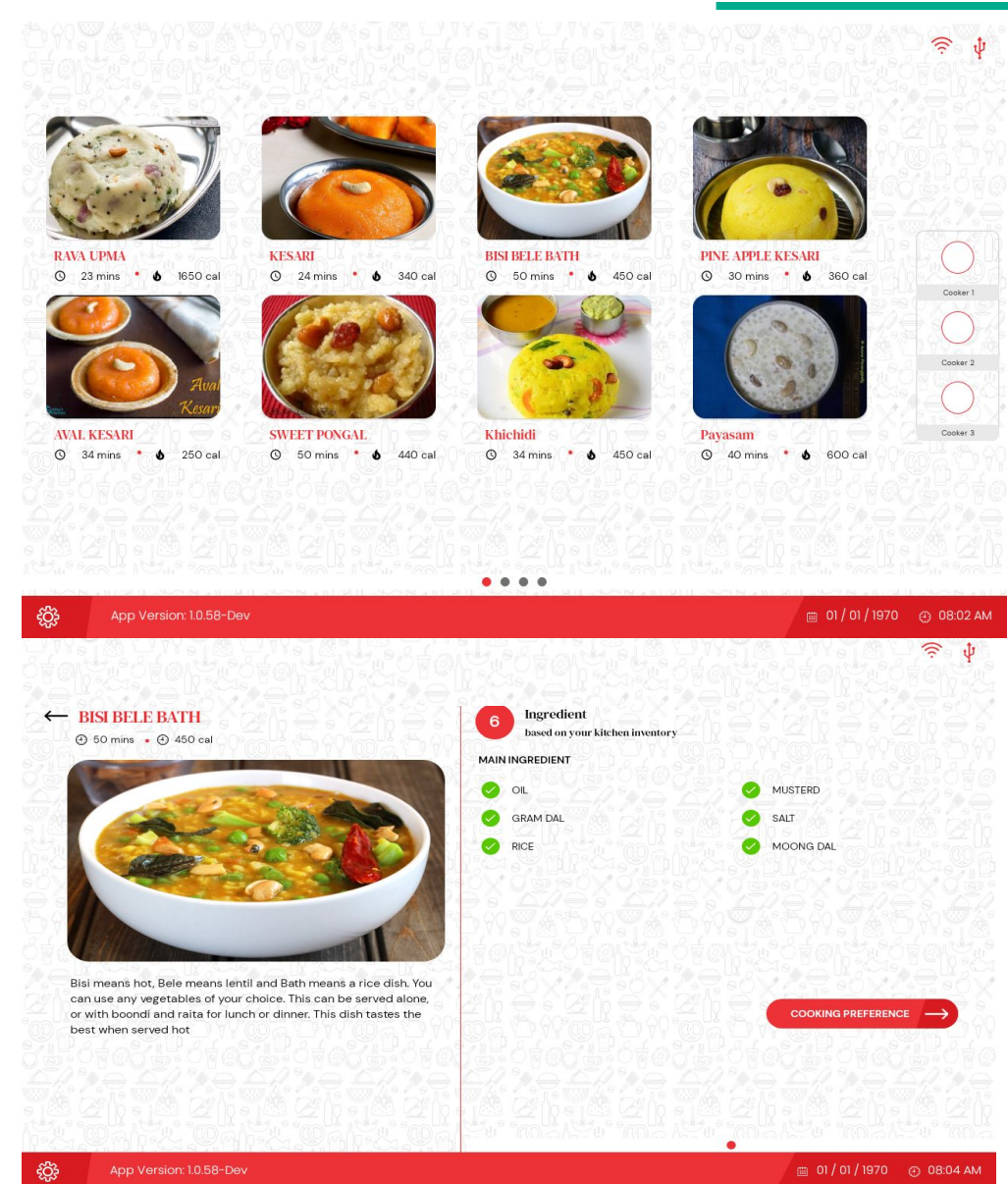
- Android based HMI app with real-time UART control
- **MQTT** IoT protocol used for real-time data synchronization
- Cloud sync via custom recipe management portal
- Integrated Firebase Crashlytics & performance monitoring

## Key Features

- Cloud-based recipe creation & seamless device synchronization
- Real-time alerts and process notifications
- Automated logging of recipe preparation with timestamps
- Parallel operation of 3 smart cookers for maximum efficiency

## Business Value

- IoT-ready scalable hardware platform
- Real-time data sync using **MQTT** for instant monitoring and control
- High cooking precision and consistent results
- Reduces reliance on skilled operators
- Centralized monitoring and remote update capabilities





# Industrial Convection Oven HMI Application

## Hardware

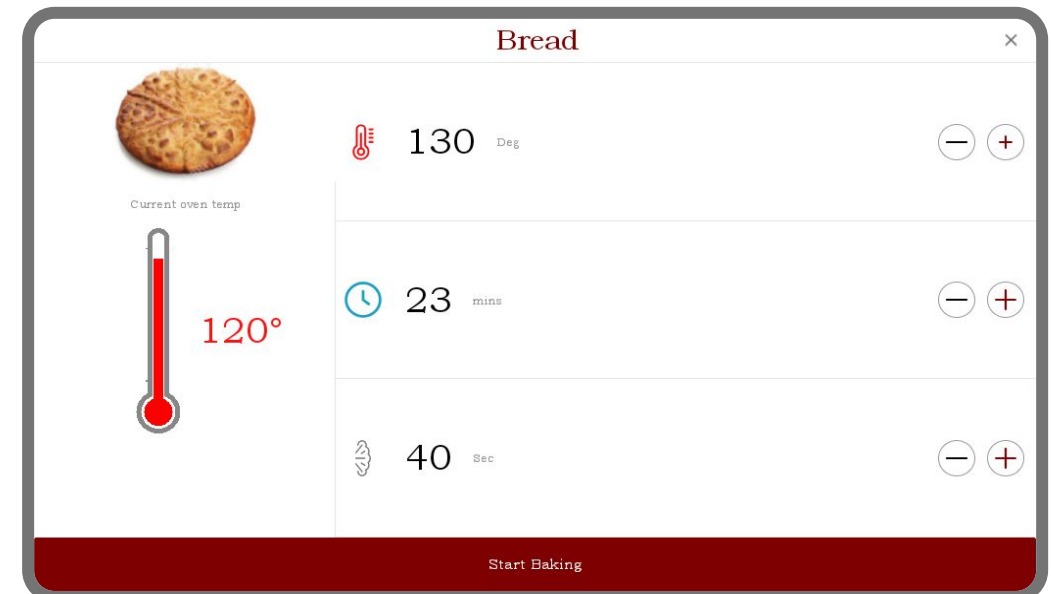
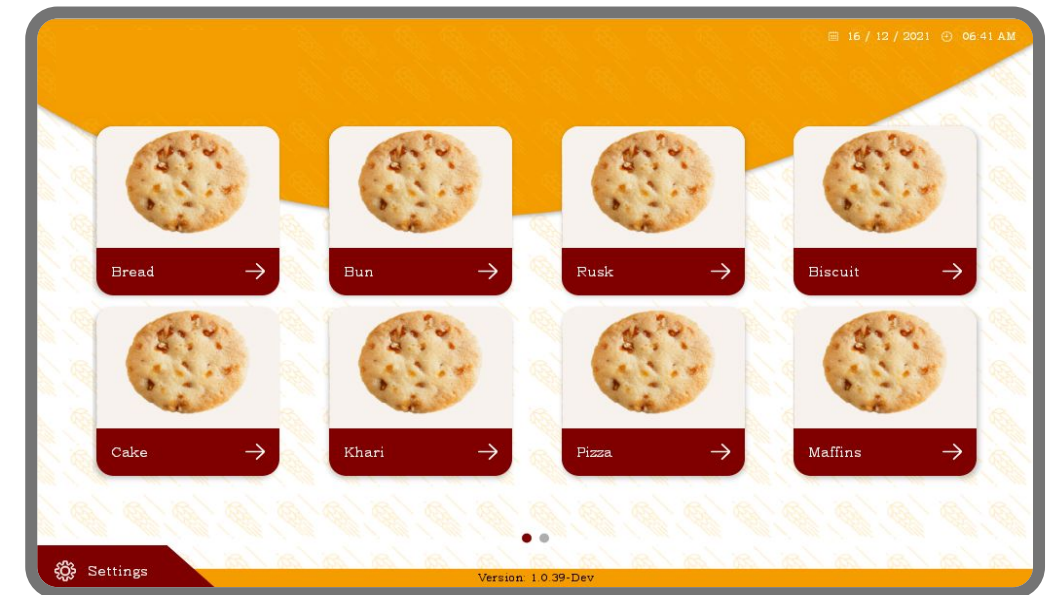
- **Android 10 AOSP Board** customized for industrial use, with Quectel SC200R smart IoT module
- **7" & 10" capacitive touch screens** with industrial-grade responsiveness
- **UART interface** for serial communication with control PCBs
- **Sensors** for diesel flow, water flow, humidity, steam, and temperature etc
- **Input/output components** for accurate real-time machine control
- **Component lifetime monitoring** for critical hardware components
- Developed separate HMI apps for three distinct machines: **Oven, Spiral Mixer, and Proofer**

## Software

- Android-based HMI apps with real-time UART control for each machine
- **MQTT** protocol for real-time cloud data sync and remote machine control
- Cloud sync with centralized recipe portal from central kitchens and ability to add multiple recipes locally.
- **Local and cloud-accessible** manuals, service history, maintenance reports
- **Firmware and app updates** delivered via OTA

## Key Features

- **Central kitchen recipe sync** – manage and distribute recipes from the cloud and local interface
- **Real-time sensor monitoring** – track diesel, water, humidity, steam, and temperature data
- **MQTT-based remote control** – control and monitor machines remotely in real time
- **Automated logs & lifetime alerts** – auto-record cooking data, with alerts for part replacements.



# Industrial Chamber HMI Application

## Hardware

- Android 10 AOSP board with UART interface, built for industrial environments
- Integrated Quectel SC200R IoT module with Wi-Fi, 4G, and GPS
- 10.1" industrial-grade capacitive touch screen with responsive UI
- Sensor & I/O support: PT100/NTC/K-Type sensors, relay-based control, dual-loop capability

## Software

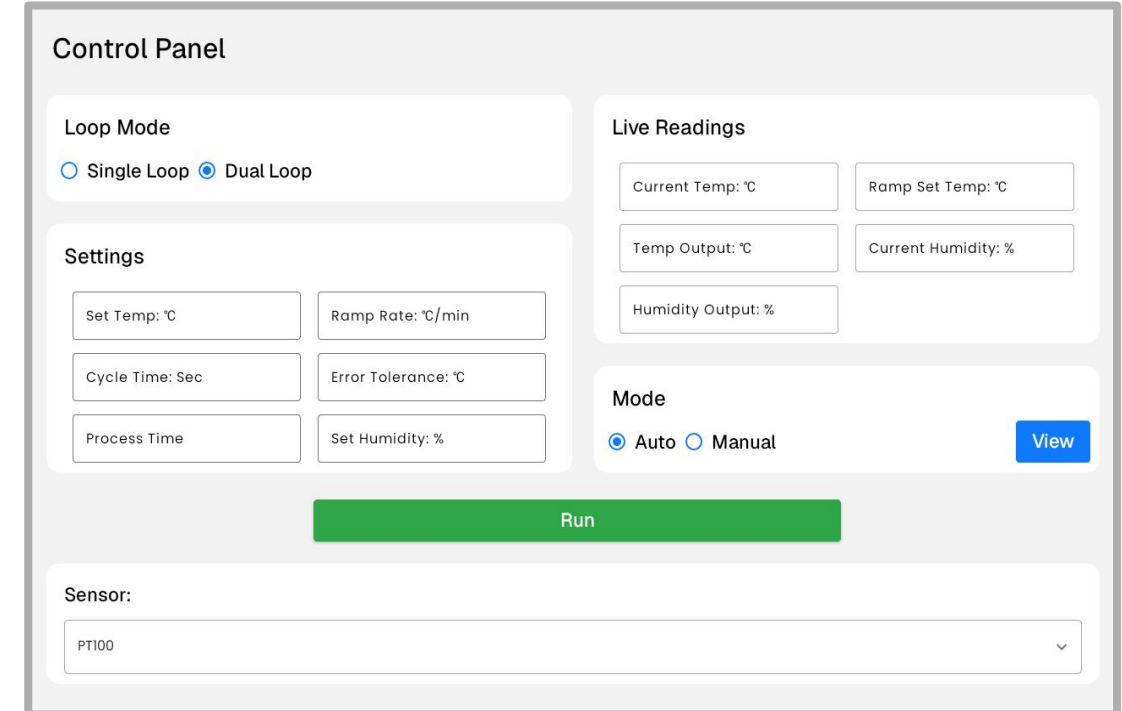
- Android-based HMI app with real-time UART communication to control board
- Supports Single & Dual Loop modes for Temp & Humidity control
- PID tuning interface with editable Auto/Manual modes
- Sensor selection, live data display, and OTA update support

## Key Features

- Real-time monitoring and control of temperature & humidity
- Editable control parameters (Temp, Ramp Rate, Humidity, Cycle Time, etc.)
- Auto/Manual PID tuning with viewable/editable Kp, Ki, Kd values
- Start/Stop control with dynamic UI toggle and live process feedback

## Business Value

- Scalable solution for industrial automation with modular loop design
- Enhanced process accuracy and consistency via live PID control
- Reduces manual effort with intuitive automation and real-time updates
- IoT-enabled system with OTA support and predictive maintenance capability



The screenshot displays the 'Control Panel' interface of the Industrial Chamber HMI Application. It features a clean, modern design with a light gray background and white panels for controls and data. The 'Loop Mode' section at the top left has two radio buttons: 'Single Loop' and 'Dual Loop', with 'Dual Loop' currently selected. Below this is the 'Settings' section, which contains six input fields arranged in a 3x2 grid: 'Set Temp: °C', 'Ramp Rate: °C/min', 'Cycle Time: Sec', 'Error Tolerance: °C', 'Process Time', and 'Set Humidity: %'. To the right of the settings is the 'Live Readings' section, which displays four real-time data points in a 2x2 grid: 'Current Temp: °C', 'Ramp Set Temp: °C', 'Temp Output: °C', and 'Current Humidity: %'. Below the live readings is the 'Mode' section, which has two radio buttons: 'Auto' (selected) and 'Manual', and a blue 'View' button. A large green 'Run' button is positioned centrally below the settings and mode sections. At the bottom of the panel is a 'Sensor:' dropdown menu, which is currently set to 'PT100'.

# Smart Tea Maker HMI Application

## Hardware

- **Android 10 AOSP Board** customized for industrial use, with Quectel SC200R smart IoT module
- **10" capacitive touch screens** with industrial-grade responsiveness
- **Ingredient dispensers** managed via hardware for tea powder, sugar, and multiple spices
- **Sensors and actuators** to track dispensing accuracy and timing

## Software

- **Android-based HMI app** for user interaction and recipe creation and customization
- **UART-driven control logic** for precision in ingredient dispensing and sequence control
- **Ingredient tracking** with real-time display of used items and gram quantities
- **Integrated analytics** for preparation time, usage history, and tea configurations.

## Key Features

- **Custom tea recipe creation** with control over flavour, strength, and serve count
- **Dynamic spice selection** (ginger, masala, cardamom) with step-wise fall control
- **Fast tea preparation** compared to traditional home methods
- **Live display** of ingredient usage and total preparation time.

## Business Value

- **Personalized tea experience** at scale with user-defined preferences
- **Reduces preparation time** while maintaining authentic taste
- **Tracks consumption data** for ingredient planning and maintenance
- **Ideal for kiosks, offices, and public spaces** with minimal operator intervention



# FMCG Liquid Dispenser HMI Application

## Hardware

1. **Android 10 AOSP Board** with UART communication to machine control board
2. **21.1” capacitive touch screen** for interactive product selection and engagement
3. **Local storage and USB support** for offline data export and access
4. **Industrial-grade integration** with dispenser units for accurate product tracking

## Software

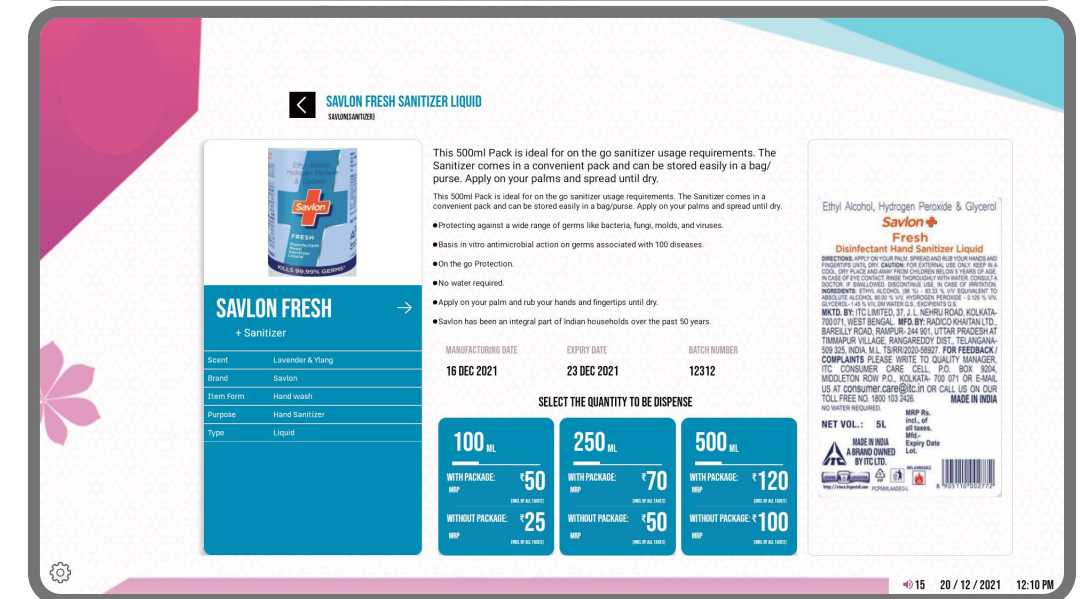
1. **Android based HMI apps & Web-connected product catalog** synced to machines (online & offline modes)
2. **Real-time logging** of every user and machine interaction
3. **Exportable reports** available locally and through external storage devices
4. **Consumption analytics** to support automated restocking and reordering suggestions

## Key Features

1. **Packaging reduction & recycling promotions** integrated into user experience
2. **Machine logs and user actions** fully tracked for audit and reporting
3. **Dynamic content updates** from the cloud, ensuring relevant promotions and data
4. **Brand engagement tools** that reinforce sustainability values at the point of use

## Business Value

1. **Supports FMCG sustainability goals** with real reduction in plastic use
2. **Boosts brand visibility** as a sustainability-focused innovator
3. **Reduces packaging costs** and aligns with global green packaging initiatives
4. **Enables smarter inventory planning** via real-time consumption pattern





# HealthCare Projects





# Blood Pressure Monitoring Mobile Application

## Hardware

- **Bluetooth-enabled BP Monitor** supporting BLE communication
- **Captures systolic, diastolic, heart rate, and SpO<sub>2</sub> data**
- **Finger-based sensor interface** with auto-read and signal processing
- **Battery-operated compact design**, optimized for home and clinical use

## Software

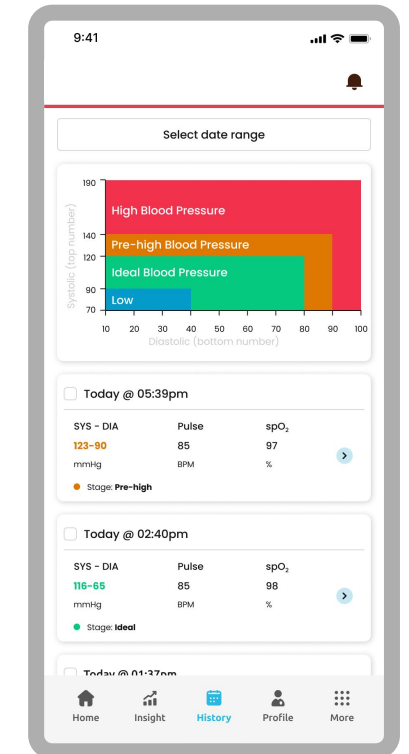
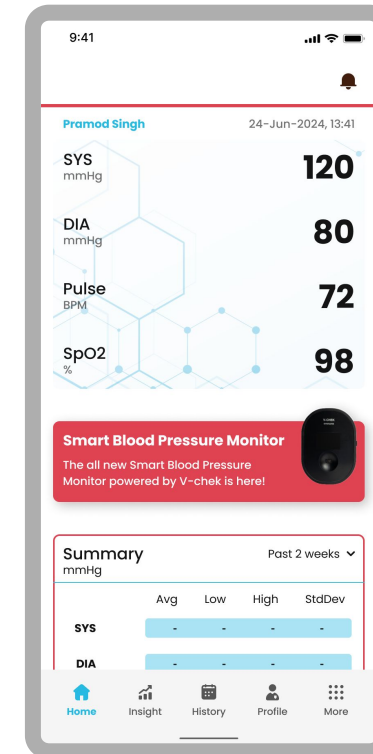
- **Cross-platform mobile app** (Android & iOS) with BLE device pairing
- **Real-time health data visualization** with graphs and history
- **Multi-user profile management** for family members
- **Cloud synchronization** for remote access, backup, and insights

## Key Features

- **Live BP, heart rate & SpO<sub>2</sub> tracking** with instant feedback
- **Health record history** and trend analytics
- **Family data management** under a single account

## Business Value

- **Improves preventive healthcare monitoring** with accurate data tracking
- **Enables remote consultations** with shareable health records
- **Scalable for telemedicine platforms** and clinical integrations
- **Enhances user retention** via family-focused features and health insights



# Rehabilitation Mobile Application

## Hardware

- **Custom rehabilitation gloves** with **15 actuators and integrated sensors**
- **Bluetooth-enabled microcontroller** for real-time mobile app communication
- **Precision control of finger movement** through programmable vibration and actuation
- **Durable, wearable design** optimized for stroke recovery and physiotherapy use

## Software

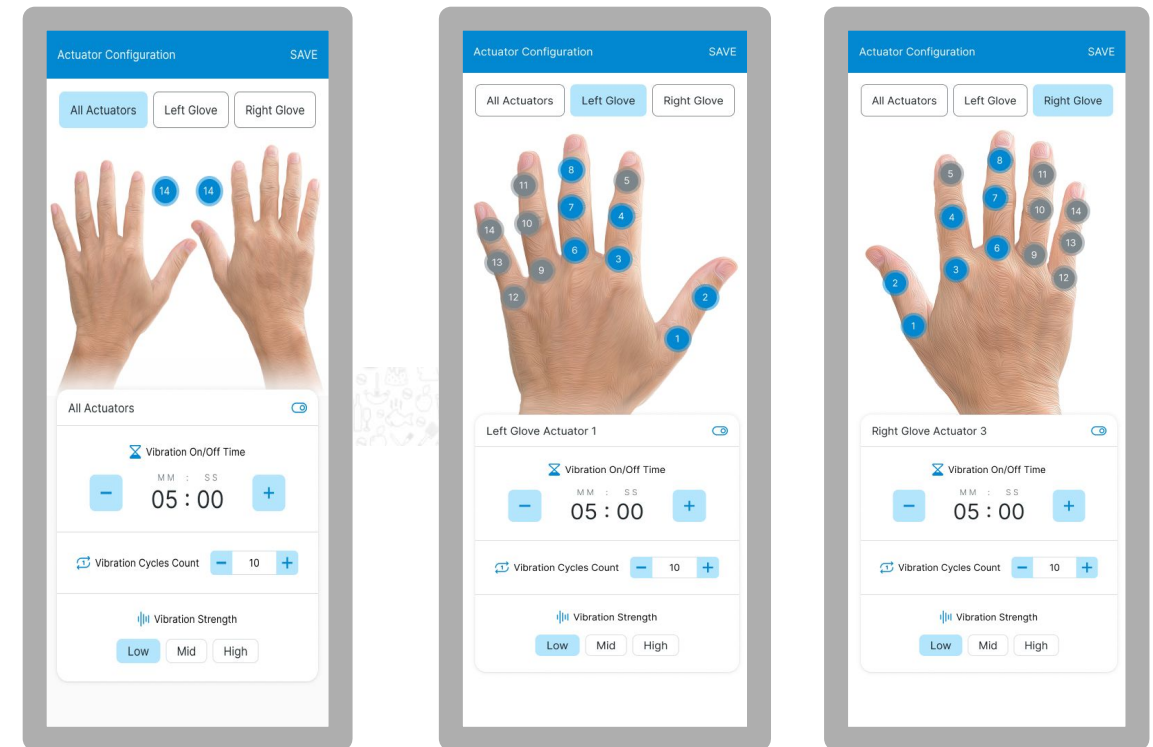
- **Mobile app** (Android/iOS) for actuator control and therapy session configuration
- **Real-time Bluetooth connectivity** for responsive feedback and data sync
- **Session planner**: set **vibration intensity**, **cycle count**, and duration per actuator
- **Progress tracking** for each therapy session and finger movement metrics

## Key Features

- **Individual actuator control** across all fingers for targeted therapy
- **Customizable vibration & movement patterns** per patient requirement
- **Live feedback & session monitoring** via app
- **Secure data storage** and export for therapist review

## Business Value

- **Enhances stroke rehabilitation outcomes** through consistent, guided therapy
- **Reduces therapist workload** with remote patient monitoring
- **Scalable platform** for hospitals, rehab centers, and home-based care
- **Improves patient engagement** with real-time progress visibility



# ECG Monitoring HMI Application

## Hardware

- Android 10 AOSP-based industrial device
- UART serial communication with ECG sensor module
- 10.1" capacitive touch screen with medical-grade UI
- Connectivity: USB, Wi-Fi for printing & sharing options

## Software

- Real-time ECG waveform rendering on-screen
- Patient registration & procedure logging
- Post-procedure PDF report generation
- Integrated report sharing via Email, WhatsApp, etc.

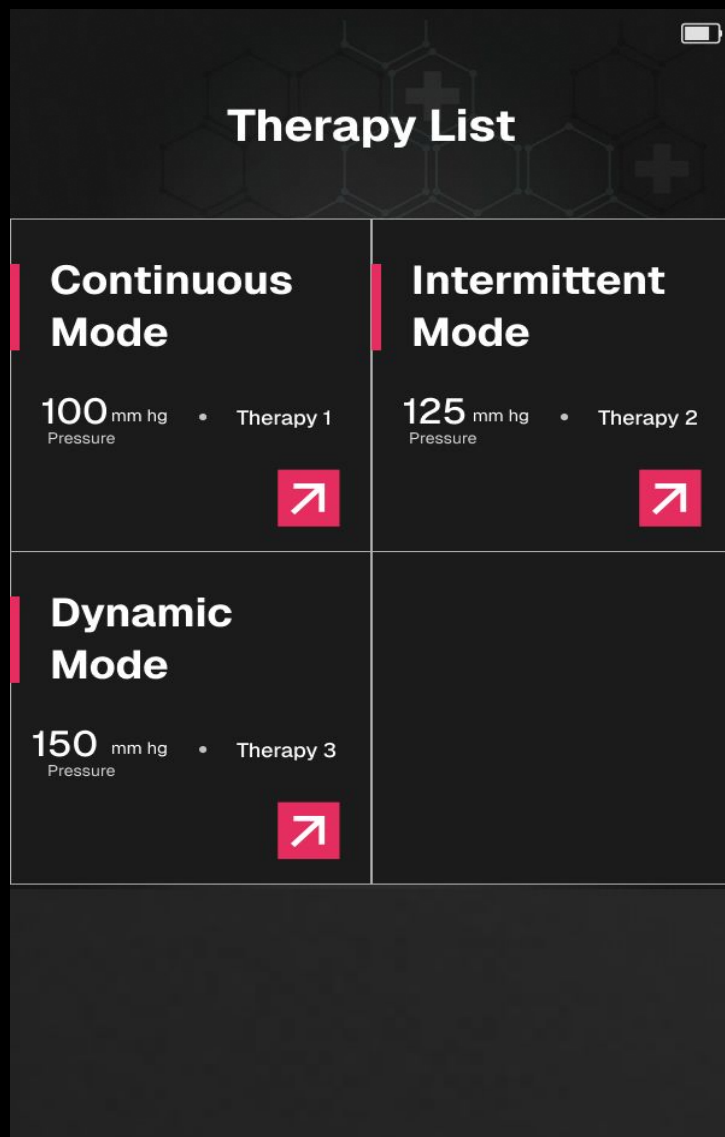
## Key Features

- High-accuracy real-time ECG signal visualization
- Multi-patient management with historical data tracking
- Printable reports with procedure summary
- Easy export & sharing of test results

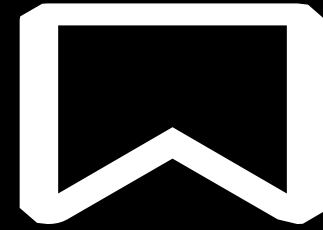
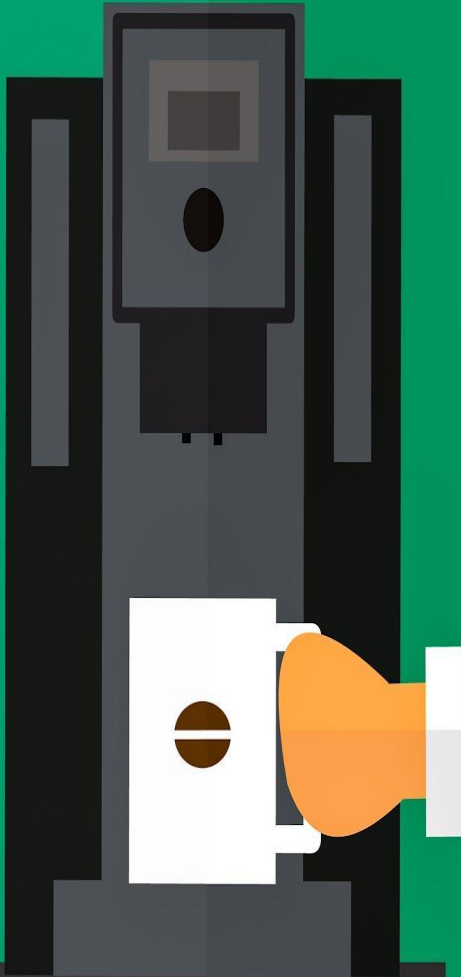
## Business Value

- Reliable and portable ECG diagnostic platform
- Reduces manual effort with integrated report generation
- Enhances clinician efficiency through instant sharing
- Customizable for various medical and outpatient settings





Medical Device HMI Android Application



Connected Vending Machines



# Coffee Vending HMI Application

## Hardware

- **Android 10 AOSP Board**, customized for industrial use
- **Integrated Quectel SC200R IoT module** with Wi-Fi, 4G, and OTA capabilities
- **UART serial interface** to control ingredient dispensing via internal PCB
- **7" & 10.1" capacitive industrial-grade touch screen** for smooth user interaction

## Software

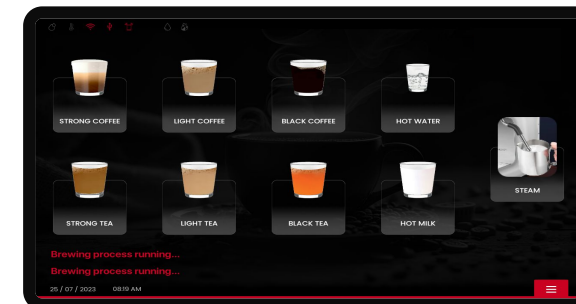
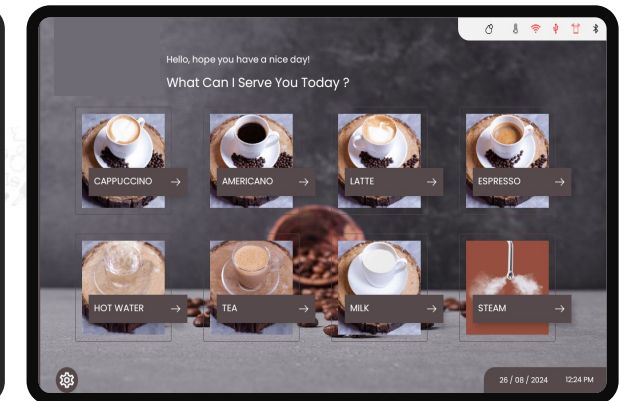
- **Android HMI app** for beverage selection, machine settings, and media playback
- **Role-based login modes**: Technician and Operator with separate access control
- **Offline media support**: play videos/images during idle time via USB
- **Local storage + Cloud sync** of dispense logs, machine configurations, and performance data

## Key Features

- **Dynamic beverage configuration**: set ingredient quantity, timing, and images
- **Automated logs for each dispense**, including ingredient-level data and timestamps
- **Sales tracking, machine settings, and component lifecycle monitoring**
- **Idle-time video/image playback** for promotions or branding

## Business Value

- **Complete IoT-ready vending platform** with real-time cloud integration
- **Enhances drink quality & machine efficiency** through detailed control
- **Media-driven customer engagement** during idle periods
- **Improves serviceability** with technician mode and lifecycle tracking





# Smart Home Applications





# Smart Home - IOT Mobile Application

## Hardware

- **Supports a wide range of smart devices:** lights, fans, IR blasters, plugs, locks, and more
- **Wi-Fi & IR communication** for device control and feedback
- **Smart Plug, Lock & Lighting modules** integrated with relay and sensor hardware
- **Compatible with 3rd party IoT ecosystems** via MQTT or IR remotes

## Software

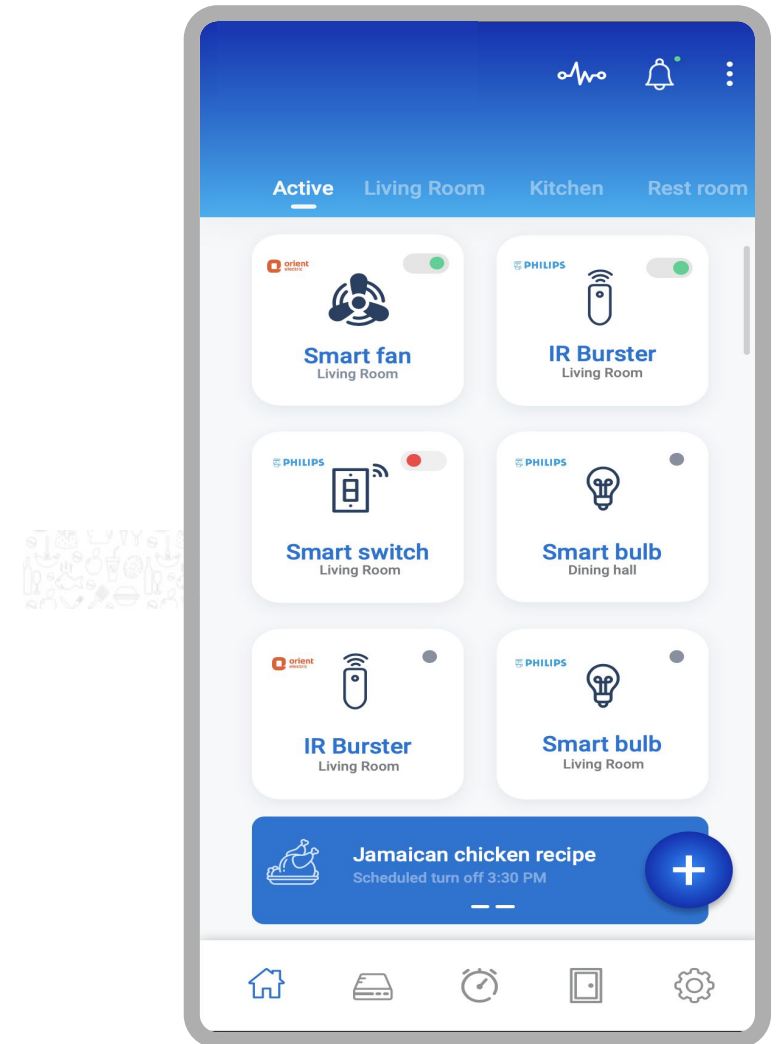
- **Cross-platform mobile app** (Android & iOS) for full smart home control
- **Unified control dashboard** to manage all devices from one interface
- **Cloud sync & local network fallback** for continuous accessibility
- **Scene and automation configuration** based on schedules, sensors, or manual triggers

## Key Features

- **All-in-one smart home control app** for diverse devices and brands
- **IR remote learning & replication** for traditional appliances
- **Customizable automation:** create scenes, timers, and routines
- **Multi-user access with roles** for family or guests

## Business Value

- **Single platform for full home automation** – eliminates the need for multiple apps
- **Scalable & modular** – easily add or remove smart devices
- **Enhances user convenience and energy efficiency**
- **Strong market appeal** for OEMs, builders, and tech-savvy homeowners



# Smart Plug - IOT Mobile Application

## Hardware

- **Wi-Fi-enabled smart plug** with Access Point (AP) and Station modes
- **Supports MQTT protocol** for lightweight, real-time communication
- **Compatible with household appliances**: geysers, mixers, grinders, lights, fans, etc.
- **Overload protection and relay control** built into the plug's firmware

## Software

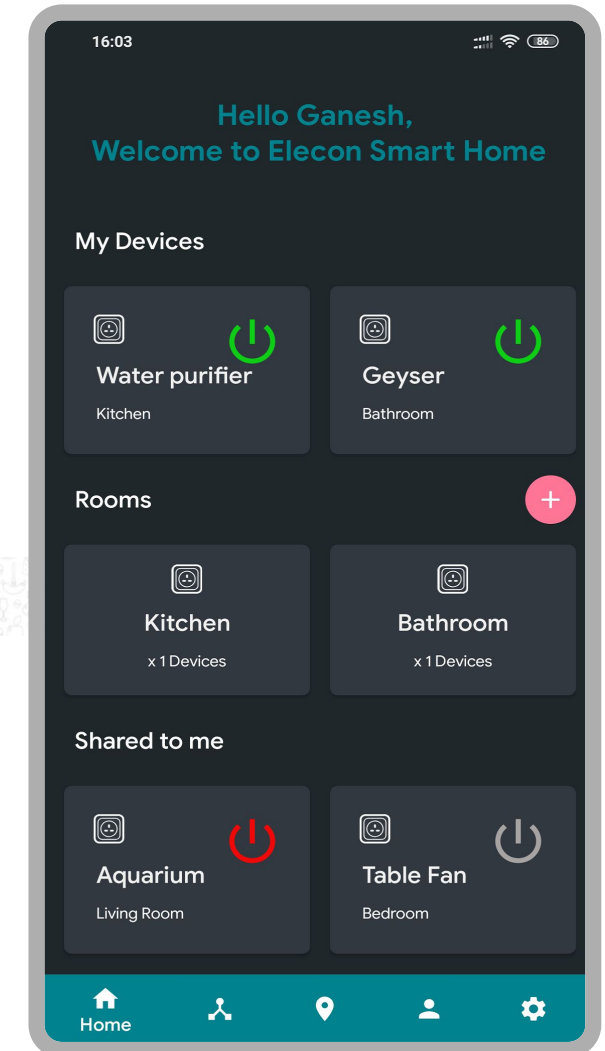
- **Cross-platform mobile apps** developed for both Android and iOS
- **AP mode for initial setup** and seamless Wi-Fi configuration
- **MQTT-based remote control** from anywhere, via internet
- **Device status monitoring** and toggle control within the app

## Key Features

- **Control home appliances remotely** via mobile app using MQTT
- **Real-time on/off status updates** and usage feedback
- **Easy onboarding** via Access Point mode
- **Supports multiple devices** with plug grouping and naming

## Business Value

- **Scalable IoT solution** for smart homes and remote energy management
- **Cross-platform reach** with apps for both Android & iOS
- **Enables appliance automation** and energy efficiency
- **Future-ready with MQTT** for integration into broader smart home systems



# Retail Projects



# RFID scanner and Encoder Application

## Hardware

- **Android POS & HMI devices** integrated with UHF RFID readers
- **Supports EPC Gen2-compliant RFID tags** for retail-grade applications
- **USB, UART, or Bluetooth interface** to connect RFID reader modules
- **Touchscreen interface** for real-time encoding and tag management

## Software

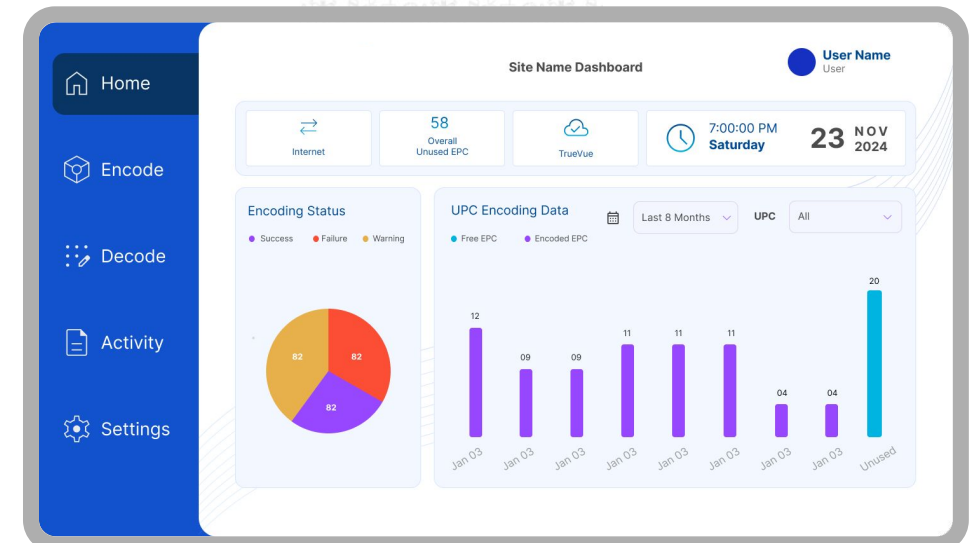
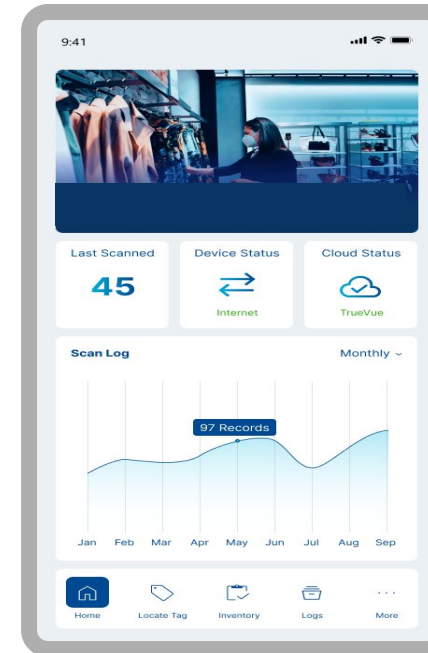
- **Android app** to encode EPC data onto RFID tags
- **Reads EPC and decodes to GS1 product codes (GTIN, SKU, etc.)**
- **Supports tag rewrite, lock, and delete operations**
- **Cloud sync for real-time inventory, item tracking & audit**

## Key Features

- **EPC-to-GS1 decoding and product mapping**
- **Bulk tag encoding and quick scan mode** for retail environments
- **Tag rewrite, reassign, and secure deletion options**
- **Automatic sync of product inventory status to cloud**

## Business Value

- **Reduces manual barcode scanning** and improves checkout speed
- **Improves inventory accuracy** and stock visibility in real-time
- **Enables item-level tracking** and loss prevention
- **Seamless integration with retail ERP & warehouse systems**





# Vehicle Infotainment Projects



# Vehicle Infotainment HMI Application

## Hardware

- **Android 10 AOSP platform** with automotive-grade reliability
- **10.1” capacitive touch display** optimized for in-vehicle environments
- **Integrated Bluetooth & Wi-Fi** for connectivity and external device pairing
- **CAN/UART interfaces** to fetch real-time vehicle data (speed, tyre pressure, etc.)

## Software

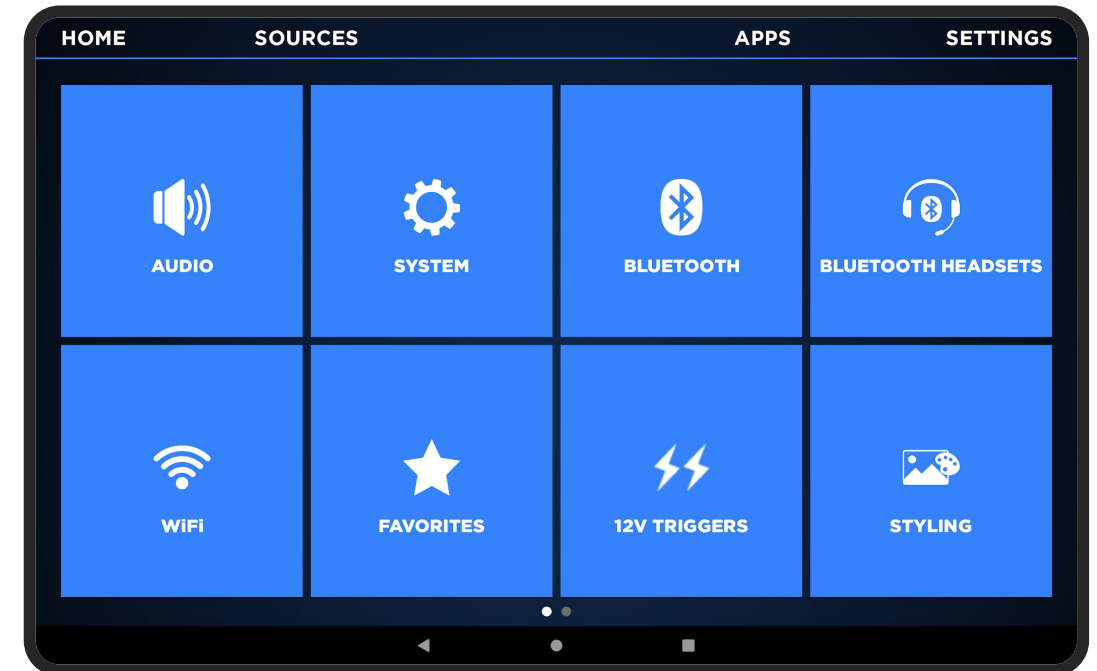
- **Android-based infotainment app** with modular architecture
- **Bluetooth headset & phone profile integration** for hands-free calling and media
- **AM/FM, weather band, satellite radio** support with dynamic audio controls
- **Dynamic app installation** and OTA updates for feature expansion

## Key Features

- **Real-time vehicle telemetry:** speed, tyre pressure, and system indicators
- **Entertainment suite:** music, radio, podcasts, and phone media
- **Bluetooth phone pairing:** hands-free calls, contacts sync, and profiles
- **Interactive UI** tailored for minimal driver distraction

## Business Value

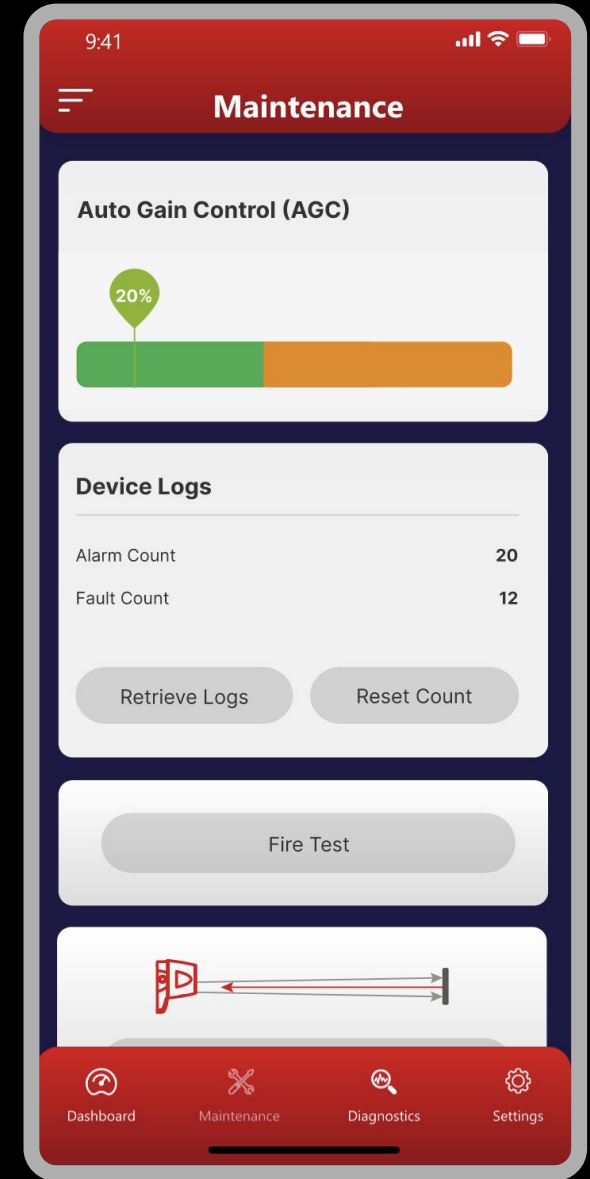
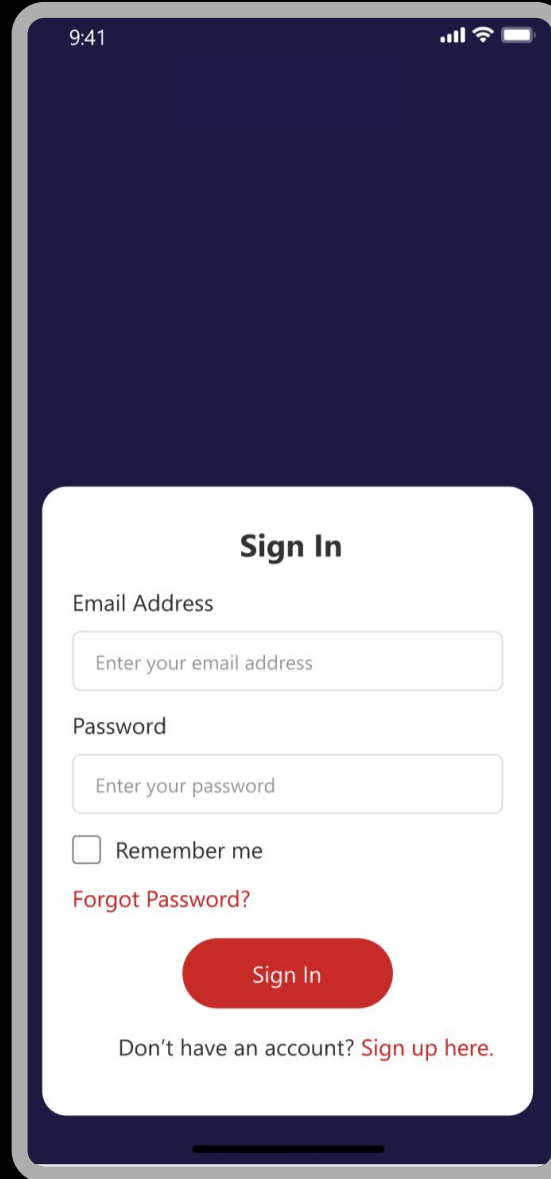
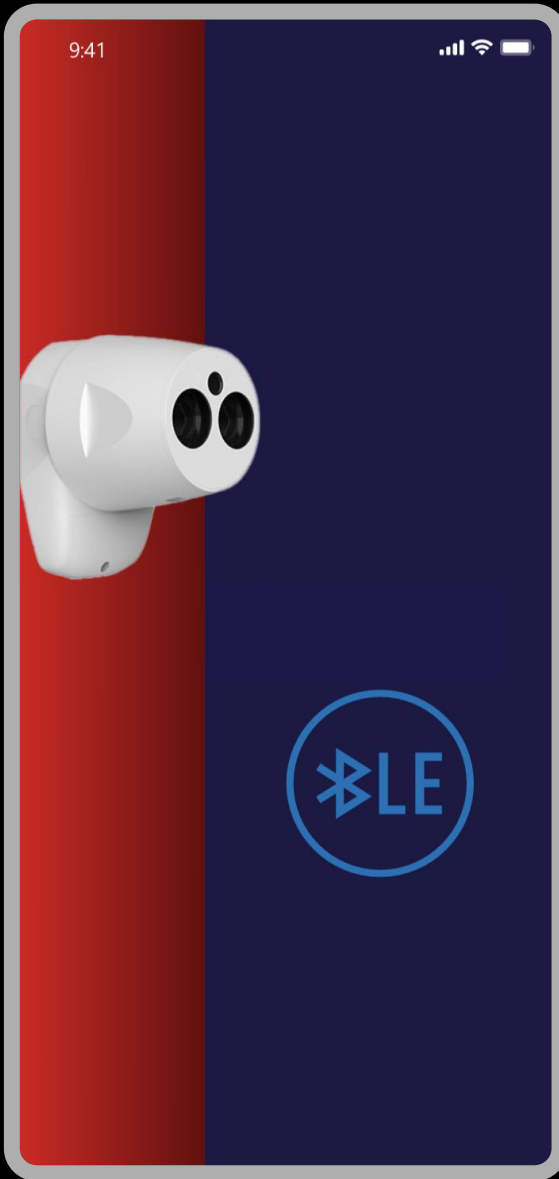
- **Enhances driver experience** with centralized infotainment and diagnostics
- **Enables OEM branding and service integrations** via custom apps
- **Improves safety and convenience** through hands-free interaction
- **Future-ready platform** for over-the-air updates and connected features.



# Other Projects



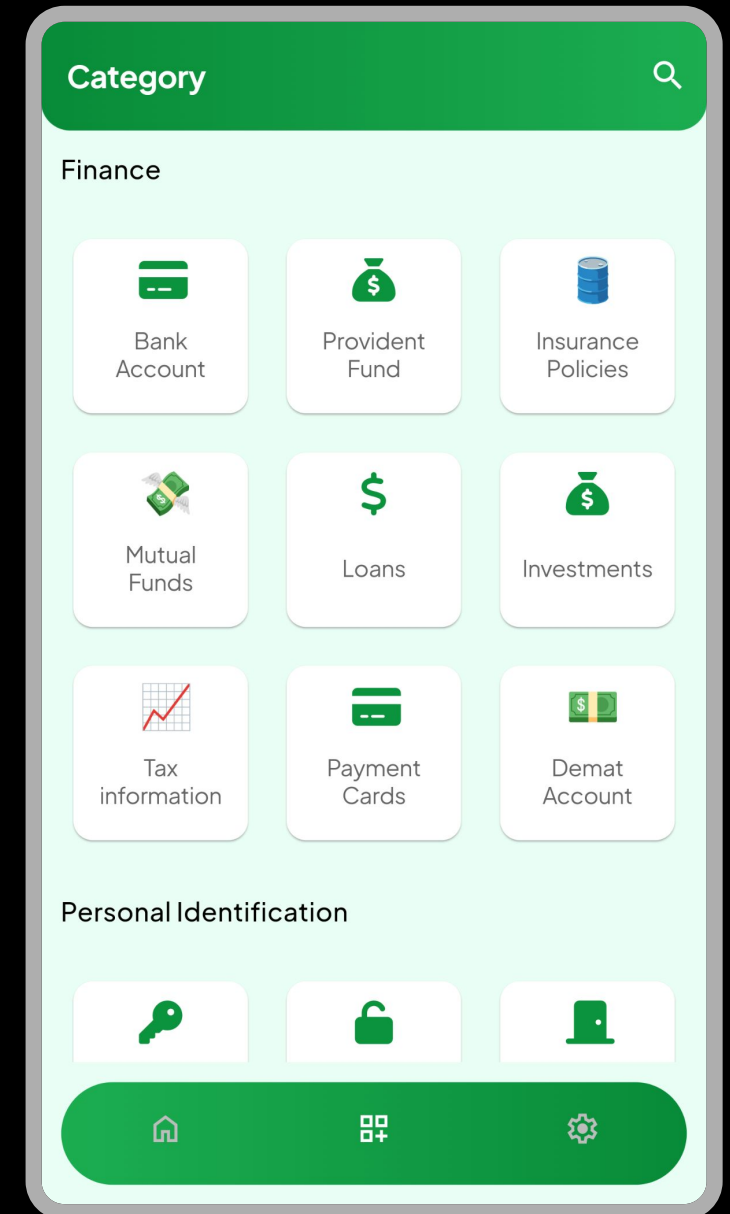
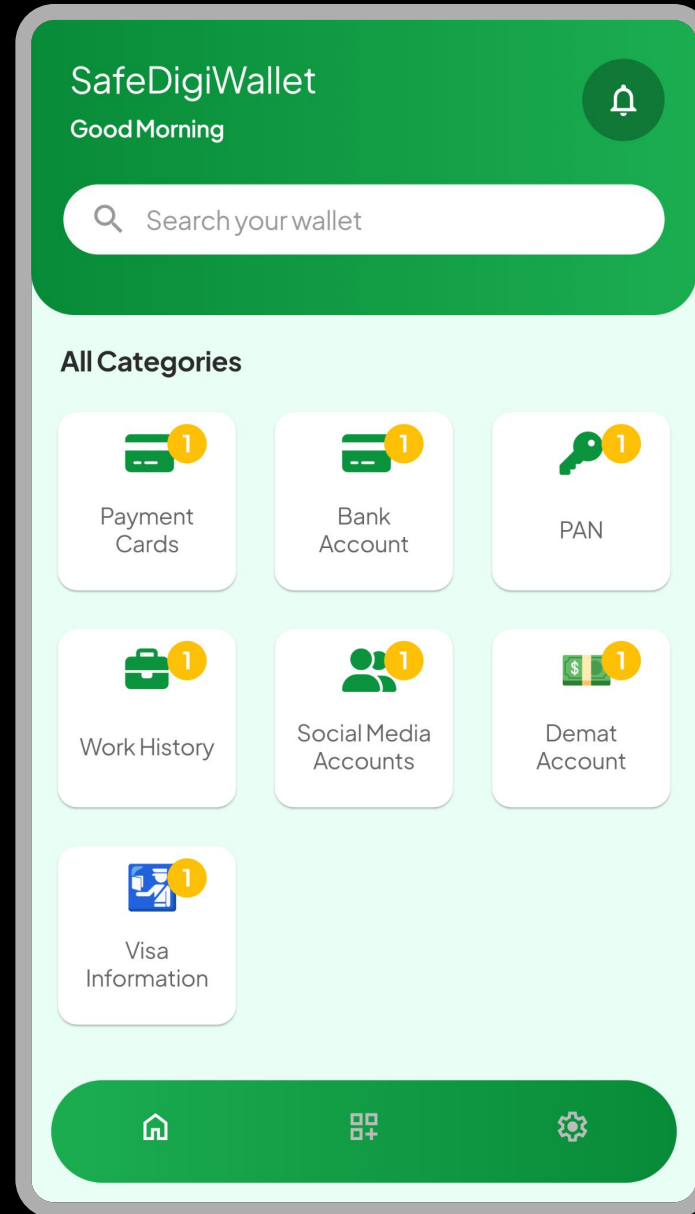
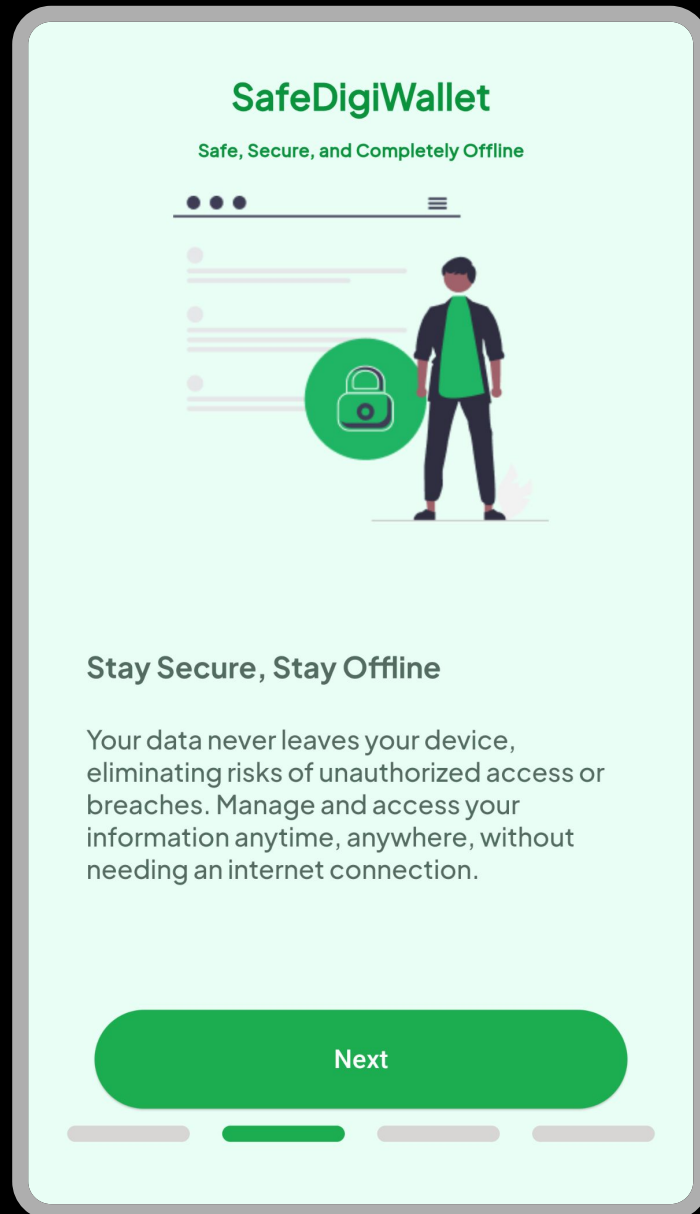




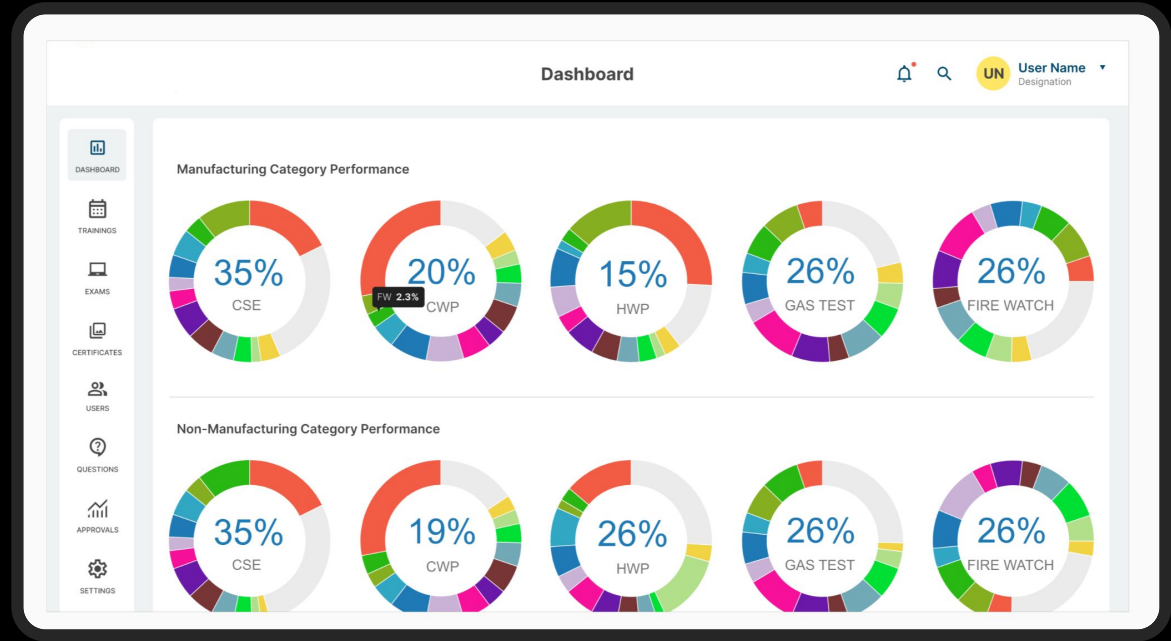
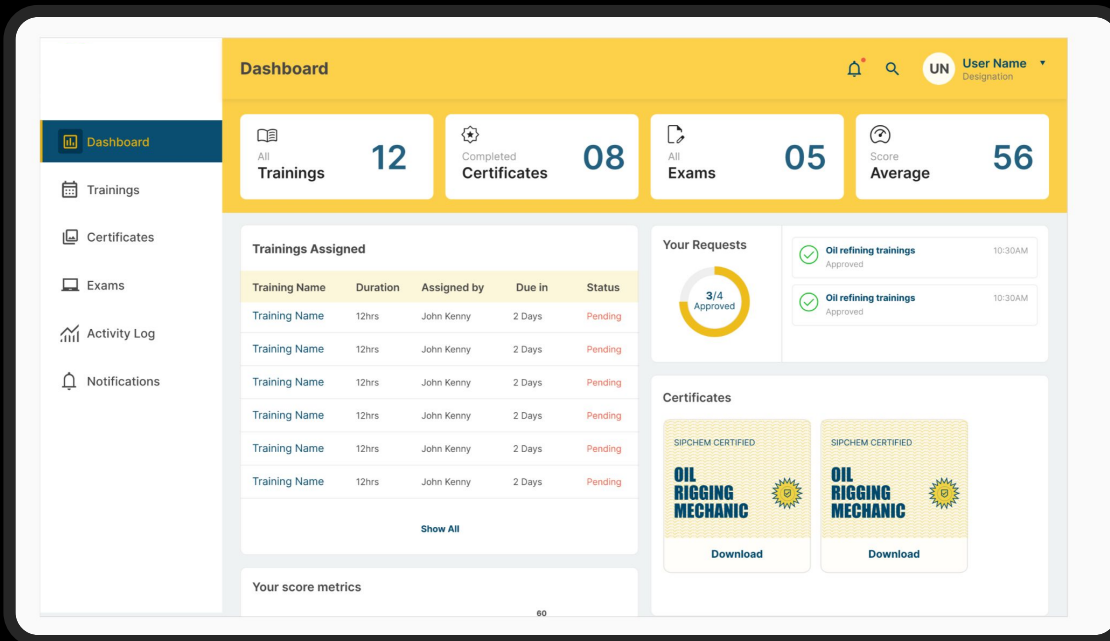
Fire Panel Configuration Application



Fire Panel Application



SafeDigiWallet - Mobile apps (Android & IOS)



**Trainings**

UN User Name  
Designation

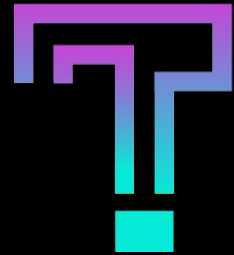
In Progress **03** Completed **12** Schedule **24** Manage Trainings Add New Training

Training Name	Category	Date & Time	Enrolled	Available	Duration	Status
Hot Work Permit	Manufacturing	23 Mar 2024 - 10:30AM	40	0	2 Hours	In Progress
Cold work Permit	Manufacturing	23 Mar 2024 - 10:30AM	40	0	2 Hours	In Progress
Cold work Permit	Non-Manufacturing	23 Mar 2024 - 11:30AM	40	0	2 Hours	In Progress
Confined Space Entry	Manufacturing	23 Mar 2024 - 10:30AM	18	22	2 Hours	Completed
Confined Space Entry	Manufacturing	23 Mar 2024 - 10:30AM	18	22	2 Hours	Scheduled

**Trainings**

UN User Name  
Designation

Training Name	Category	Duration	Scheduled on	Status	Due in	Action
Cold Work Permit	Manufacturing	12hrs		Approved		Schedule
Cold Work Permit	Non-Manufacturing	12hrs	10 May 2024 - 11:30AM	Approved	2 Days	Scheduled
Hot Work Permit	Manufacturing	12hrs		Awaiting Approval		Pending
Hot Work Permit	Non-Manufacturing	12hrs		Awaiting Approval		Pending
Confined Work Space	Manufacturing	12hrs		New Training		Request
Confined Work Space	Non-Manufacturing	12hrs		New Training		Request
Gas Test	Manufacturing	12hrs		Approved		Schedule
Gas Test	Non-Manufacturing	12hrs		Approved		Schedule
Fire Watch / Standby	Manufacturing	12hrs		Rejected		Re-Request
Fire Watch / Standby	Non-Manufacturing	12hrs		Rejected		Re-Request



**THOUGHT**  
MOBILE TECHNOLOGIES

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