RAPIDISE®

QUALITY DELIVERED

Turnkey Product Engineering & Electronics Manufacturing

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Introduction and Building Automation Capabilities Deck

NXP

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We are **transforming the ODM landscape** by seamlessly connecting design and manufacturing with our cutting-edge on-demand platform

Our USP

- 25+ yrs of Manufacturing Services Delivery
- 12+ Yrs of Design Services Delivery
- Owned Manufacturing & Assembly Line
- Electronics, Mechanical, IoT, AI & Cloud Development
- Ready Products for White-labelling

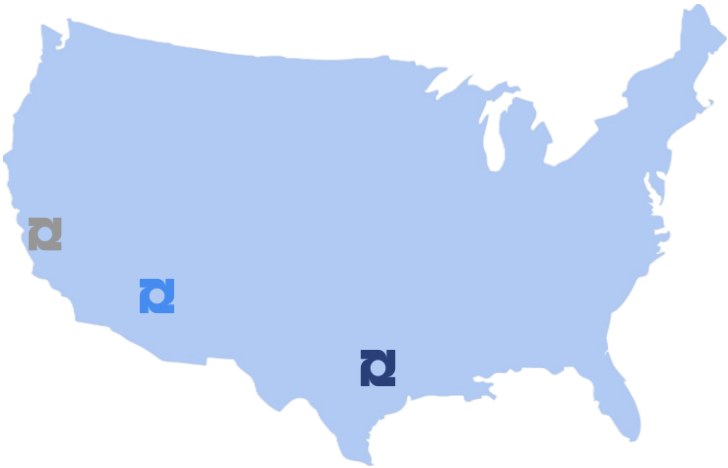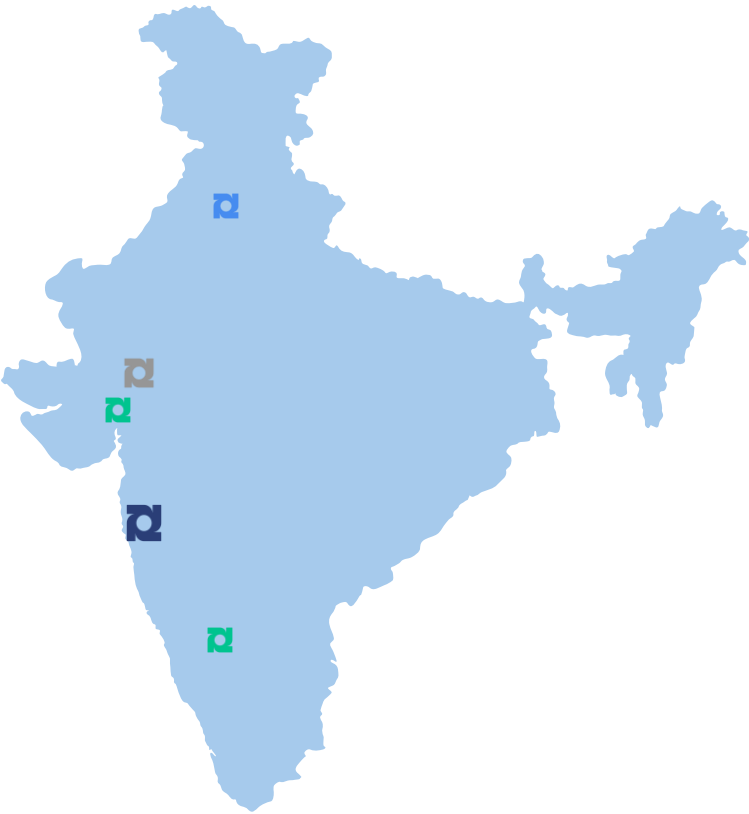|			
Manufacturing & Engineering Team	300+	SMT & PCBA Facilities	2
Successful Product Deliveries	135+	Full Product Assembly & Testing Lines	6
Satisfied Customers	100+	R&D, Development & Product Testing Centers	3

Global Footprint

USA

| 1 Manufacturing Facility | 1 Sales Offices | 1 USA HQ |

India

| 3 R & D Centers | 1 Manufacturing Facilities | 1 India HQ | 1 Sales Offices |

Japan

| 1 Sales Office |

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Building Automation Subject Matter Expertise

Smart Building Control Systems

- Access Control and Security Integration
- Building Management Systems
- Sensor Integration and Calibration
- AI-Driven Fault Detection and Diagnostics (FDD)
- AI Video Analytics
- Testing and Validation

Energy Management and Sustainability

- Energy Monitoring and Optimization Solutions
- Thermal and Power Management Systems
- Personalized energy usage targets with actionable insights

Security and Access Systems

- IP-Based Surveillance Integration
- Visitor Management and Biometric Authentication
- Smart Locking Mechanisms and Card Readers

IoT Connectivity and Edge Processing

- IoT Gateway Development (Ethernet / Wi-Fi / LoRa / 5G)
- Sensor Network Integration (Temperature, Occupancy, Air Quality)
- Edge Analytics and Predictive Maintenance Algorithms
- Cloud Connectivity and Data Management Platforms

UI and Control Applications

- Custom HMI and Touch Panel Design
- Mobile App Development for Facility Control (iOS, Android)
- Web-Based Dashboards and Real-Time Monitoring
- Voice Assistant Integration (Alexa, Google, Siri)
- Over-the-Air (OTA) Firmware and Software Updates

Organizational Capabilities

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Resources Capabilities

- Product Engineering
- Product Manufacturing
- Testing & Certification
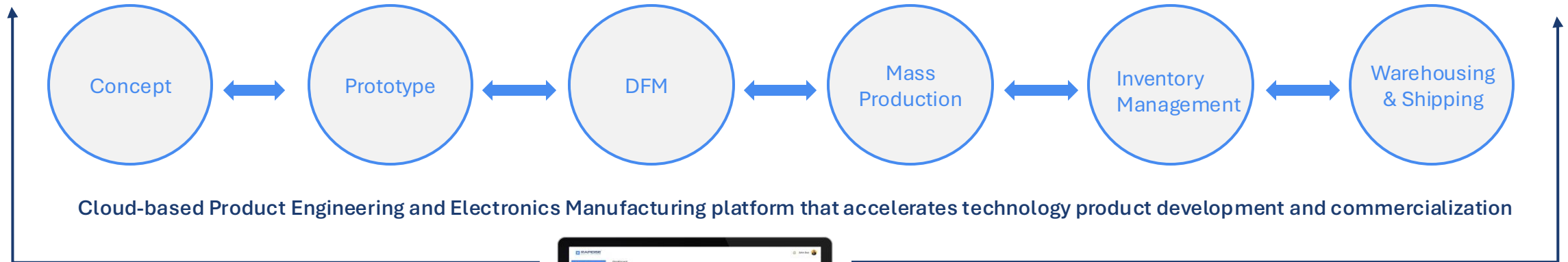- Cloud & Application Development
- DFM

Owned Infrastructure

- Pre-certification Lab
- High Speed SMT Lines
- Electronics Assembly Line
- Camera Assembly Line
- EDVT Test Lab
- Clean Room

ODM Capabilities

- IoT Modules
- Asset Trackers
- Driver Monitoring System
- Vision Algorithms
- AI Box
- Camera Modules & Products

Partner Ecosystem

- PCB Fabrication
- Tooling & Molding
- Qualcomm, NXP, Renesas
- Packaging Material
- Wiring Harness & Cables
- Product Certification Labs

Concept ⟷ Prototype ⟷ DFM ⟷ Mass Production ⟷ Inventory Management ⟷ Warehousing & Shipping

Cloud-based Product Engineering and Electronics Manufacturing platform that accelerates technology product development and commercialization

Capabilities:
- Ready products for white labelling
- Instant Quoting for custom product development - Efforts, Timeline, & Costing

- A Cloud-based Project Management Dashboard
- Cloud Based Supply Chain Management
- ODM Marketplace

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Services- Product Engineering :

Embedded Hardware

- Hardware Architecture
- BoM Optimization
- Electrical Schematic Design
- Multilayer PCB Layout Design
- High-Speed Board Design
- Analog & RF Design
- Certification & DFM
- Image, Audio, Antenna Tuning

AI Development

- Computer Vision
- Edge Computing & AI
- Algorithm Development
- Recommendation Engine
- Natural Language Processing
- ADAS & DMS
- Healthcare AI
- Predictive Maintenance

Mechanical Design

- New ID concept generation
- Product Design & Development
- Reverse Engineering & Concept designing
- Simulation and Analysis
- IP Standards Validation
- 3D Engineering

Embedded Software

- Bare Metal, RTOS, Linux, AOSP
- BSP, Device Driver and Firmware
- Linux Kernel Customization
- HAL, I2C, SPI, PCIe, WiFi, Cellular, Sensors
- Multimedia Codec & Framework
- FOTA - Firmware Over the Air
- User Interface Software

Information Technology

- Web & Mobile App Development
- API Development and integration
- IoT Dataflow Architecture
- Data Visualization
- Managed DevOps Services
- Cloud Engineering - AWS, Azure, GCP
- Robotic Process Automation
- Metaverse, AR/VR App

New Product Introduction

- Certifications
- DFM Analysis
- Supply Chain Management
- Automated Test Jigs
- Feature Enhancing and Re-engineering
- BOM Optimization
- Performance Optimization

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Services & Capabilities - Manufacturing :

Manufacturing Services

- Electronic Design Validation
- PCB Assembly (SMD, DIP, TH)
- Supply Chain & Sourcing
- Mold & Enclosure Manufacturing
- Prototyping
- Box Build & Full Product Assembly
- QA/QC & Testing
- Packaging
- Green Manufacturing

Manufacturing Capabilities

- 5 Million+ PCBs Delivered
- Manufacturing & Engineering Team of 500+
- 10 Electronics Manufacturing & PCBA Facilities
- 18 SMT & 22 Full Product Assembly Lines
- 6 R&D and Final Product Testing Centers
- SMT Area Rated Class 100,000 Clean Room
- Camera Module Assembly Area Rated Class 100,000 Clean Room
- Solder Paste Printer
- In line Solder Paste Inspection (Make: Kohyoung)
- Nitrogen and Lead-free Compatible Soldering
- Wave Soldering
- Solective Soldering (Make: ERSA)
- Pin INsertion Machine (Make: TE P350)
- Inspection- 3D Automatic Optical (Make: Omron)
- Inspection- In-line X Ray Machine (Viscom (Germany) and Shimadzu (Japan))
- PCB Cleaning (Make: Unitech)
    - Electromagnetic Testing (EMI & EMC), ESD (Electrostatic) Control workstation
    - Thermal, Humidity, Insulation Testing, Endurance & Ageing Testing
    - Climatic Chambers (Hot, Cold and Humid)
- Component mounting machine Capability:
    - Min : 0402mm/ 03015 inch
    - Max : 102*102*T 25.4 mm
    - Accuracy : 30 Micron

Services- Product Reliability Test Lab :

EMI Testing

- Electro Magnetic Interference
- ESD checker system
- ESD Simulator
- Semi Anechoic Chambers:
- EMI Test Receivers:
- RF Power Amplifiers:
- Pre-Amplifiers
- Antennas
- Directional Couplers
- BCI Probes

IP Rating

- Air Showers
- Bench Top Environmental Chamber
- Temperature & Humidity Test
- Salt Spray Chamber
- Dust Chamber
- Water Spray
- Thermal Shock
- Vibration Test
- Transient Voltage
- Laboratory Oven

RF Tuning

- Spectrum Analyzers
- Vector network Analyzers
- Signal Generators
- RF and Microwave Switches

EPC Testing

- 100x Microscope
- Profile Tuning Suite
- ESD protected production floors
- Electro-Static Discharge
- Dark Room for camera lens calibration
- Resistance Meter
- Power Analyzer
- Thermal Imager
- Function Generator
- Insulation Test
- Electronic Lead Test
- LCR Meter
- Highly Accelerated Stress Test
- Switch Endurance
- Oscilloscope
- ACG Rig Test Bench (Vehicle Simulation)
- Digital Call Box and Analog Call Box

Vehicle Testing

- Vehicle Cold Chamber
- Chassis Dynamometer

Water Spray Chamber

Salt spray & Thermal Shock

Accelerated Stress Test

Hot / Cold Environment Chamber

MID Motor Performance Test Rig

Sensor Functional Tester

Performance Measurement

EMI-EMC

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Product Development Life Cycle :

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Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
DESIGN	**DEVELOPMENT**	**CERTIFICATION**	**PRODUCTION READY UNIT**	**MASS PRODUCTION**

Phase 1 — DESIGN

Key Deliverable

- Requirement Documentation & Technical Blueprints

Key Results:

- Product Requirement Specification (PRD)
- Architecture document
- Test Cases & Acceptance Criteria
- Component Selection & Bill Of Materials(BOM)

Phase 2 — DEVELOPMENT

Key Deliverable

- Functional Prototype (1-20 Units)
- Proof of Concept Prototype (if Required)
- EVT Prototype

Key Results:

- Design Version 1.0
- PCB Schematic, Layout & Gerber Files
- Firmware Binary Source Files
- Mobile & Web Applications
- Mechanical Design CAD Files
- Cloud Architecture

Phase 3 — CERTIFICATION

Key Deliverable

- DFM Prototype
- Certified Prototype
- DVT Prototype

Key Results:

- Design Version 2.0 :
  -Long Run Testing
  -Corner Cases
  -New Functionalities
- UL, CE, FCC Certifications
- Enclosure Mold Manufacturing
- Injection Molded Enclosure
- Automated Testing Zig

Phase 4 — PRODUCTION READY UNIT

Key Deliverable

- Production - Ready Prototype /Golden Sample (50-100 Units)
- PVT Prototype

Key Results:

- Design Version 3.0 :
  - Field Testing
  - Performance Improvement
  - Battery Life Improvement
- Final Design For Manufacturing (DFM) Changes
- Final Manufacturable Design Files Injection Molded Enclosure

Phase 5 — MASS PRODUCTION

Key Deliverable

- Fully Commercialized Product

Key Results:

- PCB Assembly & Manufacturing
- Component Supply Chain Management
- Packaging & Shipping
- Ongoing QA/QC Testing

4-8 WEEKS → 12-52 WEEKS → 4-16 WEEKS → 4-8 WEEKS → ONGOING

Deliveries Across Industries Served :

Automotive

ADAS Camera	DMS Camera	Infotainment System	Vehicle Tracker
Location Tracker	Telematics	Instrument Cluster	Battery Management System	ECU

Consumer Electronics

Smart Watch	Personal Tracker	Smart Headphone	Smart Speaker	Smart Wi-Fi Plug
Laptop	Mobile	Smart Farming Device	Smart Grain Monitoring	Smart Mailbox

Security & Surveillance

VMS System	Tejas Safety	Surveillance Camera	Smart BLE Lock
Smart Access Control System		LoWRA Gateway	Wi-Fi Door Bell

Healthcare & Fitness

Fitness tracker	Smart headband	Smart Skin Care	
Smart Yoga Mat	Smart Lap Counter	Smart Wound Care	Smart Trainer

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Case Studies

Deliveries Across Building Automation Industry

Smart Touch Device

Retrofit Smart Switch

Surveillance Camera

Smart BLE Lock

Smart Gateway

Location Tracker

Smart Access Control System

LoWRA Gateway

Access Control System

Wi-Fi Door Bell

Smart Mailbox

Access Control System

We have designed and developed a state-of-the-art access control system tailored for discerning multi-family property owners who want a perfect balance of contemporary design and high-tech functionality. It boasts the largest color touchscreen available in both cellular and ethernet models, along with external camera integration that offers multiple photo views of visitors and live streaming video at the gate.

Our Role:

- PRD Creation
- System Architecture
- Hardware Development
- Firmware Development
- Mechanical ID Design
- EVT Prototype and Testing
- Testing and Deployment
- Certifications – FCC, PTCRB, UL, AT&T, Verizon, IP65, IK10
- Mass Production

Technologies:

- iMX 8M Plus
- LoRaWan Gateway
- STM 32 MCU
- Wiegand Interface
- Cellular & Ethernet
- 11" display
- 3MP Camera
- 3 Axis IMU Sensor
- Microphone & Speaker
- IP65 - outdoor rated

Current Stage: DVT

Application: Building Security/Access Control

LTV Volume: 20,000+

Customer: USA based Access Control OEM

Current Stage: EVT Prototypes done, PVT Production in Q4 '25

NXP – i.MX 8M Plus

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Smart Gateway For Access Controller

The Smart Controller provides complete access control intelligence in one compact device, making it easier than ever to manage building security without the need for traditional, bulky access hardware. By leveraging existing electrified door systems the smart lock integrates seamlessly into any environment while providing users with enhanced functionality, remote control, and a streamlined experience. The device connects seamlessly to cloud-based platform, providing businesses with full control over their access systems with minimal setup.

Our Role:

- PRD & System Architecture
- Embedded Hardware Development
- Embedded firmware Development
- EVT Prototype and Testing
- Mass Production
- Functional Testing

Technologies:

- Authentication IC – SE050E2HQ1/Z01Z3Z
- IoT Module – WT02C40C
- WiFi-6 and BLE-5.4

Current Stage: In Mass Production

Application: Industrial, Building Security/Access Control

LTV Volume: 50,000+

Customer: USA based Access Control OEM

NXP - SE050E2HQ1

Smart Touch Device

The Smartouch Device developed by Rapidise is a better alternative to all the traditional (manually-operated) switches available in the market. These switches can communi different ways like by touchscreen, voice assistants (Amazon Alexa, Google Home, Apple Pod), or mobile apps (iOS, Android). It is decked with various sensors such as ambie sensors and motion sensors that help awake the switchboard automatically when the us proximity. Additionally, it displays features such as sleep mode, night mode, and hib mode, thus making it a well-built product for daily usage.

Our Role:

- System Architecture
- Embedded Hardware Development
- Embedded Firmware Development
- Cloud Architecture
- Database
- Mobile App(Android and IOS)
- Mechanical Enclosure

Technologies:

- MicroProcessor
- USB A – 18W
- USB C - 60 W
- 5 Amp & 16 Amp
- Dimmer(5 Amp)
- Temperature sensor
- Ambient sensor
- Relay
- Physical Switch integration

Retrofit Smart Switch

Retrofit Smart Switch is a compact, Wi-Fi smart switch designed to be a gateway into the world of home automation. Tailored to fit seamlessly into standard 4M electric switch boxes, Smart Tack transforms traditional switches into intelligent, app- and voice-controlled devices. With robust integration into the Smart App, users can manage all their smart appliances, lighting, fans, air conditioners, geysers, and curtains, directly from their smartphones or via voice assistants like Siri, Alexa, or Google Assistant.

Our Offerings

- System Architecture
- Embedded Hardware Development
- Embedded Firmware Development
- Cloud Architecture
- Mobile App(Android and iOS)
- Mechanical Enclosure
- Custom Web dashboards (Member, Admin, Users)

Technologies

- 4-Relay Module
- App-controlled dimmer
- Encryption   AES-256 SSL
- Wireless Standard   Wi-Fi - IEEE 802.11 b/g/n
- Concealed Box Size   Inside 3M/4M Standard Box (any greater than 3/4M)
- Communication Protocol - MQTT, Wi-Fi
- Voice Assistant - Alexa, Google Home, Siri

SmartTap Switch Series– 7 Amp, 15Amp

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Rapidise has designed Luxury Smart Switch Series (1 Switch Module (7 Amp, 15 Amp), 8 Switch Module, 4 Switch Module) with modular designs with a universal 3-pin socket, tactile relay switches, blends high-end aesthetics with advanced smart home functionality. The product line redefines how users interact with lighting, fans, and household appliances, all through seamless app, touch, and voice control. Enabled firmware updates over-the-air, supporting continuous improvement and security.

Our Offerings

- System Architecture
- Embedded Hardware Development
- Embedded Firmware Development
- Cloud Architecture
- Mobile App(Android and iOS)
- Mechanical Enclosure
- Custom Web dashboards (Member, Admin, Users)

Technologies

- 1/8 Switch Module
- Load 7-Amp / 15-Amp Universal 3-pin Socket
- Touch Technology 5 Touch-type pads + 1 dimmer with backlights
- Wireless Standard Wi-Fi - IEEE 802.11 b/g/n
- Communication Protocol - MQTT, Wi-Fi
- Voice Assistant - Alexa, Google Home, Siri

IoT Home Automation

Rapidise's IoT Home Automation enables remote home control, real-time power monitoring, and features like virtual keys, face recognition, and continuous connectivity. The standalone double power socket with USB ports supports smoke detection, child lock, fire alarm, inter-device communication, Wi-Fi/Z-wave, scheduling, USB-C charging, ghost mode, and power usage graphs, creating a smarter and safer living environment.

Our Role:

- System Architecture
- Embedded Hardware Development
- Embedded Firmware Development
- Cloud Architecture
- Database
- Mobile App(Android and IOS)
- Mechanical Enclosure

Technologies:

- MicroProcessor
- USB A – 18W
- USB C - 60 W
- 5 Amp & 16 Amp
- Dimmer(5 Amp)
- Temperature sensor
- Ambient sensor
- Relay
- Physical Switch integration

Bodycam

The bodycam features built-in livestreaming and on-device recording, enabling unparalleled real-time supervision and support. Designed to benefit a wide range of frontline professions, it offers seamless connectivity through 4G, 5G, and Wi-Fi. With a user-friendly interface, robust build quality, and advanced security features, the bodycam is engineered for reliable performance in demanding environments.

Tech Specifications:

- Micro Processor

- OS: Android

- 2"*2" Paper Display

- System Components

  - LTE (4G), 5G Communication – via Pin-to-Pin M.2 Connector

  - Wi-Fi and Bluetooth

- Integrated 2MP Camera, Optional 2MP USB Camera

- 9 Axis IMU Sensor

- Microphone & Speaker

- IP67 - outdoor rated

- User Interaction - Voice Call Functions (Microphone and Speaker)

- Video Recording Function

IP Camera – Dome & Bullet Camera

Rapidise is engaged as an ODM to manufacture high-performance IP surveillance cameras in Dome and Bullet form factors, targeted for advanced security and monitoring applications. These cameras support H.264/H.265 dual-stream compression, up to 30fps frame rate, and are compatible with third-party VMS via open APIs. Built for durability, they operate between 0°C to +60°C, consume ≤12W power, and connect via 10/100M Ethernet. With support for remote access via web/app, encrypted communication, and mobile compatibility (iOS/Android), this solution offers a reliable, scalable platform for smart surveillance deployments.

Tech Specifications:

- 3 MP
- Image Sensor: 1/2.8" CMOS Sensor
- Lens: 4mm (M12 Mount)
- Horizontal FOV: 68° | Vertical FOV: 41°
- Day/Night: ICR Infrared Filter
- Minimum Illumination: 0.1 Lux (Color) / 0.01 Lux (B/W)
- Shutter Speed: 1/2 – 1/20,000s
- IR Function: Smart IR (Auto/Manual), ICR Infrared Filter
- Pan/Tilt/Zoom: Up to 10X Digital Zoom
- IR Reverse: Supported
- Scanning System: Progressive

Multi-Tenant Cloud Video Management Portal

Rapidise has a developed Multi-Tenant Custom Cloud Video Management Software to replace the existing third-party Portal. The portal is a comprehensive video streaming platform that enables users to manage and distribute video content seamlessly. It provides a user-friendly interface for uploading, organizing, and sharing videos securely. The portal offers robust features for video playback, customization, and analytics, making it an ideal solution for businesses and individuals in various industries.

Technologies:

- Frontend: ReactJS
- Backend: NodeJS
- Web Server: Nginx
- Database: PostgreSQL and MongoDB
- Cloud Infrastructure: Amazon Web Services (AWS)
- Video Encoding: FFmpeg
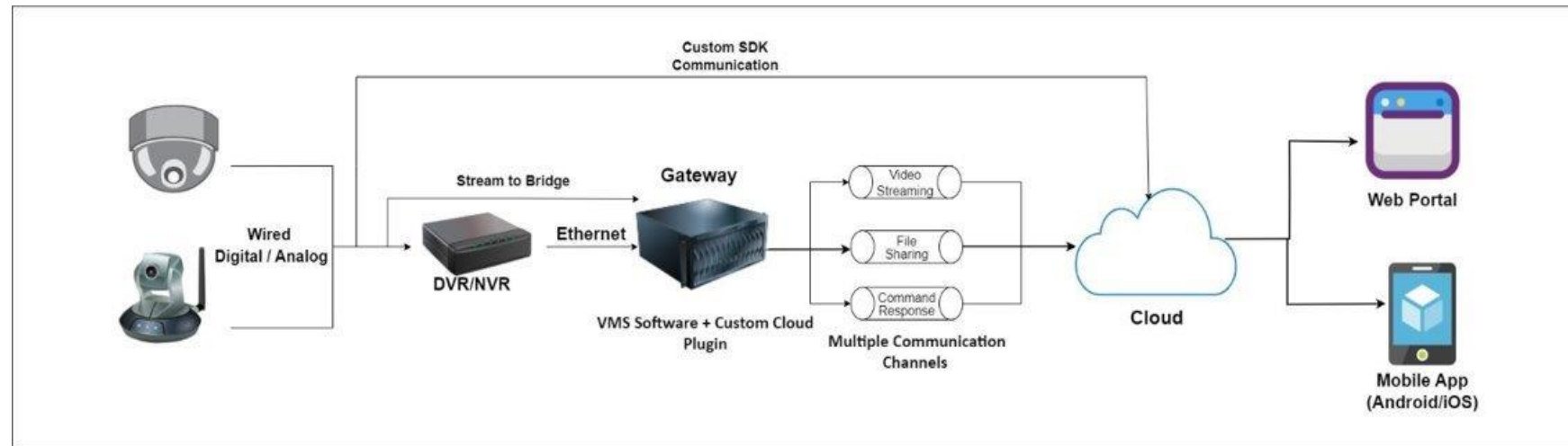
# Unified Fall Detection And Vital Capture System

Rapidise has developed a groundbreaking unified fall detection and vital capture system that integrates cutting-edge technologies to enhance the safety and well-being of veterans and elderly individuals. This case study provides an overview of the key functionalities and features of Fall Detection and Emergency Alert Response, Privacy-Preserving Video Clips, Real-time Vital Capture, Natural Language Understanding (NLU) Based Secondary Check, and Smart Lock Integration.

Our Role:

- PRD & System Architecture
- Tejas Board 625 Carrier Development
- Firmware Development (AOSP)
- Device Side Application Development
- Mechanical Development
- AI Algorithm Development
- PCB Fabrication, Component procurement and PCB Assembly
- Testing and Deployment

Technologies:

- Tejas 625 SOM
- Android 9.0
- Fall Detection Radar Module
- Communication Protocol: MQTT
- Far Field Mic Array
- USB to Ethernet Bridge IC
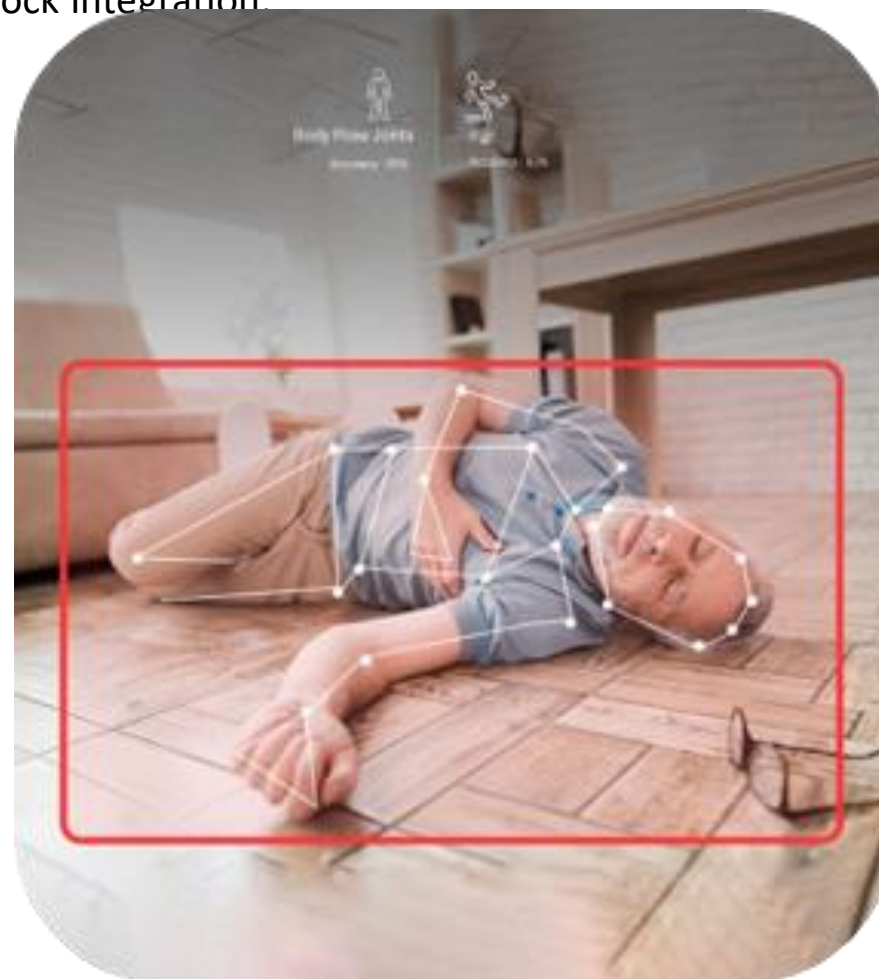
Warehouse Autonomous eCart

Warehouse eCart is an intelligent automation solution designed to streamline warehouse operations. The cart is capable of carrying up to 1 ton of load, making it suitable for heavy-duty warehouse environments. It will work as automatic vehicles through image processing and AI algorithms. It is built-in with a camera to remotely monitor warehouse cart. You can run this cart manually also through Wi-Fi connectivity using a mobile app.

Our Role:

- Image processing
- AI Algorithms
- Embedded Hardware Development
- Embedded firmware Development
- Mobile App(Android and iOS)

Technologies:

- Microprocessor
- Wi-Fi
- Bluetooth
- Image Processing
- Artificial Intelligence
- Android
- iOS
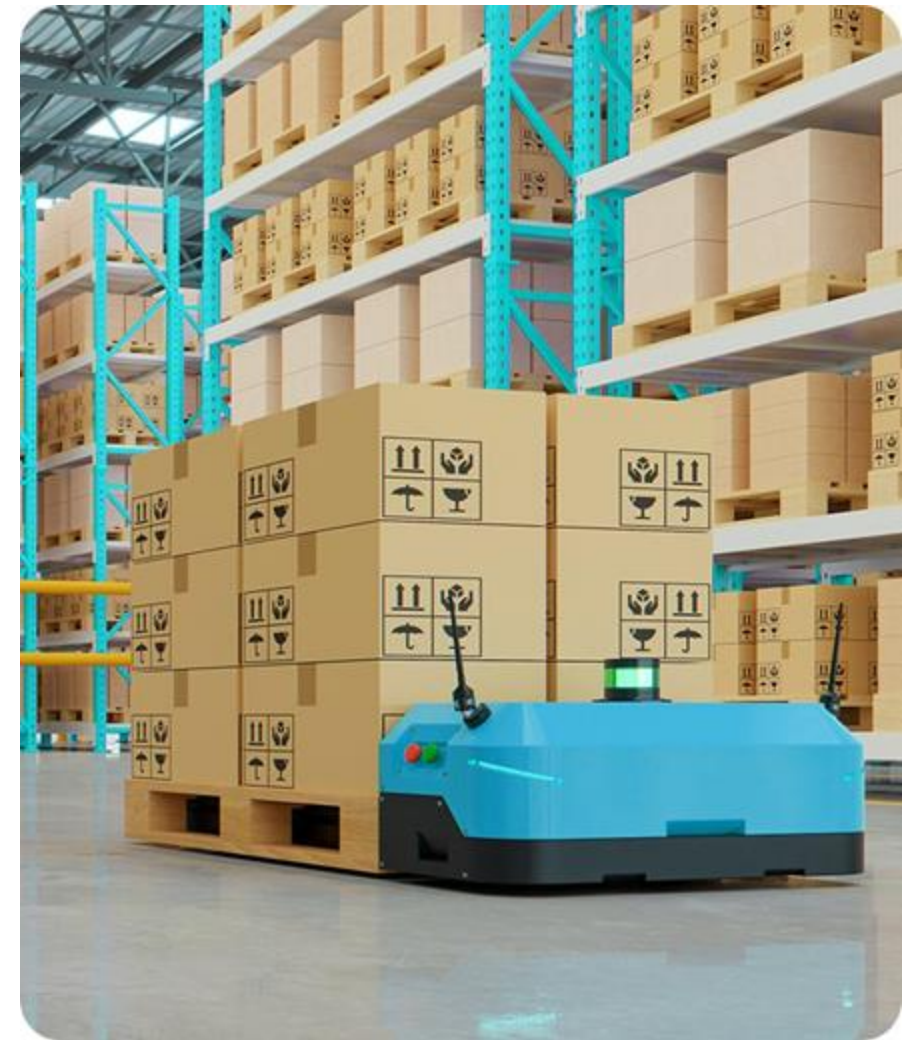
Autonomous Moving Robots – Control Board

Rapidise has designed and developed a Control Board PCB layout based on the existing schematic design. The control board serves as the central unit for managing and interfacing with various subsystems of the Autonomous Moving Robot (AMR), including steering motor drivers, hub motor drivers, IMU sensors, encoders, emergency stop systems, and communication interfaces.

Our Role:

- Embedded Hardware Development
- Embedded Firmware Development
- Prototyping
- Board Bring up
- Testing

Technologies:

- MCU STM32
- CAN1 & CAN2 (motor communication, external device communication)
- USB interface for debugging
- AMT132/RLS
- IMU Sensor

Gateway Operated Access Control System

The Project was developed to open and close the gate through LoRaWAN, BLE and HID reader cards. To achieve this, we built the hardware which can connect with LoRaWAN gateway as a Node, BLE peripheral which can connect with Mobile phone and HID wiegand interface to read the HID card data. The HID card data and other access code information can be stored in SD card. USB has been given to send debug messages on PC. Accelerometer is used to detect tampering event by detecting shake movement.

Our Role:

- PRD Creation
- System Architecture
- Hardware Development
- Firmware Development
- PCB Fabrication, Component Procurement and PCB Assembly
- Board Bring Up
- Testing and Deployment

Technologies:

- LoRaWAN Node
- BLE
- USB
- Wiegand Interface

Smart MailBox

Rapidise has developed a Mailbox Receiver to receive a package from a courier drone (could be UPS, Amazon, a 3rd party drone courier delivering hot Chinese food or chilled prescription medication), and take it inside the ''Lockbox' housed within which keeps the package warm or cold based upon the contents.

Our Role:

- Embedded Hardware Development
- Embedded Firmware Development
- Mechanical Development
- UI Design
- iOS Mobile App Development
- Web Interface Development
- Cloud Development
- REST APIs Development
- Managed Services
- Platform Version Upgrade
- Performance Optimization

Technologies:

- Microprocessor
- GSM Implementation
- GPS Implementation
- Camera Integration
- Temperature sensor
- TOF Implementation
- Web Interface
- iOS - Swift
- Database - Hybrid (Mongo & MySQL)
- Cloud - AWS
- Cloud - Oracle
- Communication Protocol - MQTT

Telep Library AI Portfolio
(Compatible with NXP)

Building Security

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Intrusion detection

Leakage Detection

Safety Gear

Facial Recognition System

Sign Language Detection

Fire and Smoke Detection
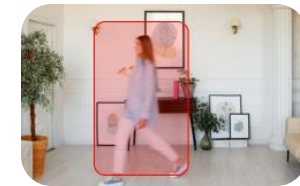
Gesture Control

Violence Detection

Word Spotting

Human Activity Detection

Gun Detection

Loitering Detection

Motion Detection

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License Plate Recognition

Vehicle in out counting

Congestion Detection

Vehicle Classification

No Parking Detection

Garbage Detection

Red Light Violation Detection

Zebra Crossing Violation

Wrong Turn Detection

Accident detection

Overspeed Detection

Deer / Animal Alert

No helmet Detection

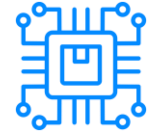**Pothole Detection**

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IoT Product Engineering	Artificial Intelligence & Machine Learning	Digital Transformation	Electronics Manufacturing	PCBA & Full Product Assembly

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