
RAPIDISE
QUALITY DELIVERED

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Product Engineering & Electronics Manufacturing

ACCOLADE®

Commercial Presentation For Accolade DMS Dashcam Development Project

Product Development Lifecycle

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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)

4-8 WEEKS

Phase 2

DEVELOPMENT

Key Deliverable

- Functional Prototype (1-20 Units)
- EVT Prototype
- DVP (Design Validation Plan)

Key Results:

- Design Version 1.0
- PCB Schematic, Layout & Gerber Files
- Firmware Binary Source Files
- Mechanical Design CAD Files
- DFMEA, DFM& DFA

12-52 WEEKS

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

4-16 WEEKS

Phase 4

PRODUCTION READY UNIT

Key Deliverable

- Production - Ready Prototype /Golden Sample
- Documents for SOP
- 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
- PFMEA

4-8 WEEKS

Phase 5

MASS PRODUCTION

Key Deliverable

- Fully Commercialized Product

Key Results:

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

ONGOING

Requirement Alignment

Requirement Alignment for Market Ready Product

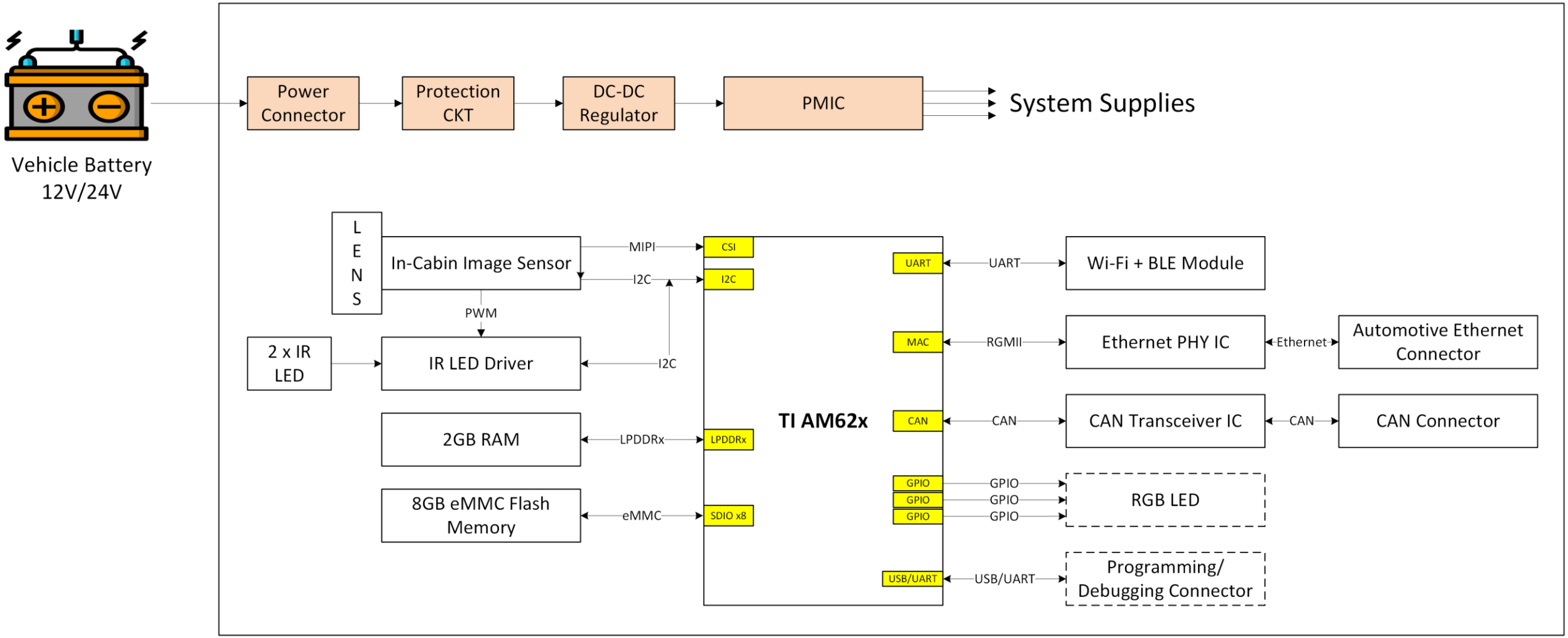
- **Objective**: Accolade is looking to develop a DMS Dash camera from scratch based on their requirements shared, the Dash camera will be mainly used in the OEM Market.
- **Current stage of development:** Development from Scratch
- **Time to Market**:
  - **PVT Build:** April 2026
  - **Market Ready Device:** TBD
- **Tentative Unit Cost:** INR 2500
- **Processor/SOM:** TBD
- **Project LMV Volume:** 500K Qty
- **RFQ Reference Link:** Click Here
- **Key Features:**
  - On the Edge DMS AI Processing
  - Ethernet Interface
  - CAN Interface
  - 1 MP Camera

Client is looking for turnkey design partner in the following areas:

Sr	Services	Y/N	Brief
1	Mechanical/ID	Yes	ID Design and Development
2	Hardware	Yes	Custom PCB/PCBA
3	Firmware	Yes	BSP, Middleware and Application Deployment (AI)
4	AI / ML	No	Developed by Accolade
5	Android/iOS	No	Developed by Accolade
6	Desktop App	No	-
7	Cloud Frontend	No	Developed by Accolade
8	Cloud Backend	No	Developed by Accolade
9	Cloud Dev-ops	No	Developed by Accolade
10	UI UX	No	Developed by Accolade
11	Certification	Yes	FCC, UL, RoHS, PTCRB, AIS-184
12	Manufacturing	No	-
13	Testing	Yes	Manual Testing and QA/QC

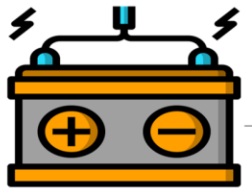
Automotive Grade – Texas Instruments AM62x

Requirement Alignment : System Architecture Diagram

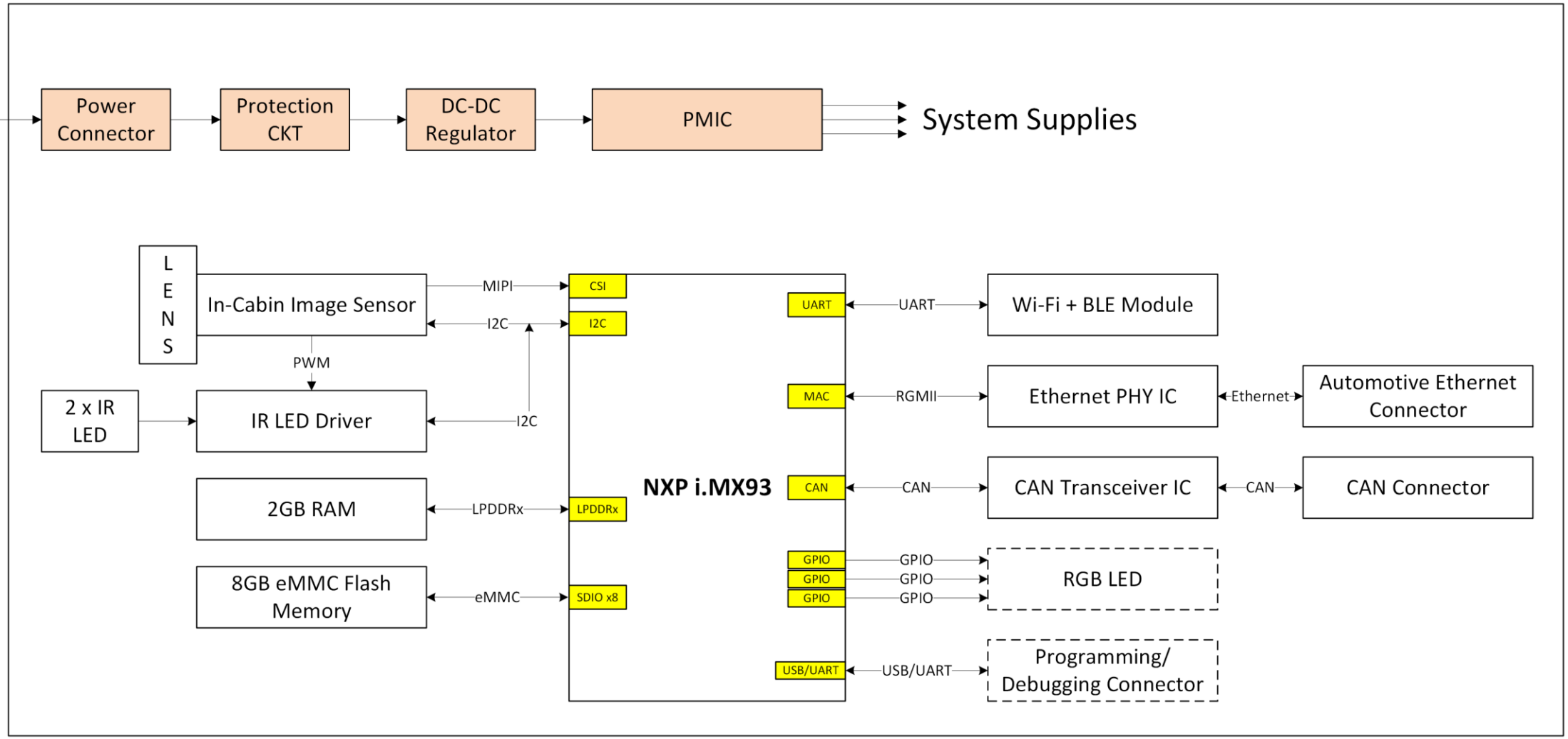


Automotive Grade – NXP i.MX 93

Requirement Alignment : System Architecture Diagram

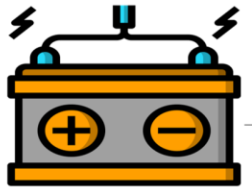


Vehicle Battery
12V/24V



Automotive Grade – NXP i.MX RT1060 Crossover MCU

Requirement Alignment : System Architecture Diagram



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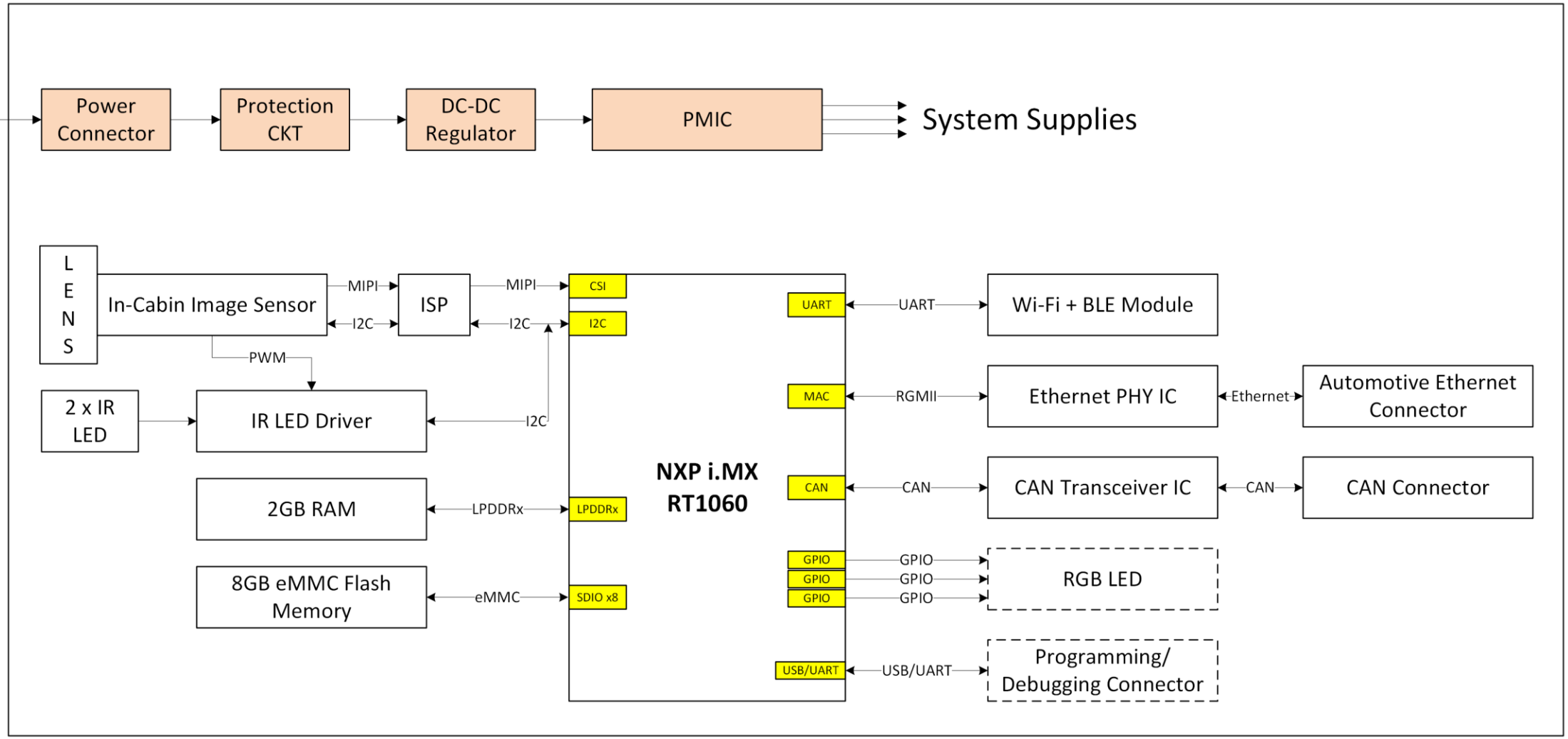
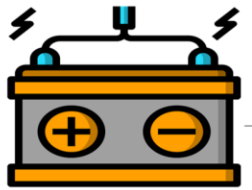
12V/24V



Automotive Grade – Sigmastar SAC8901

Requirement Alignment : System Architecture Diagram



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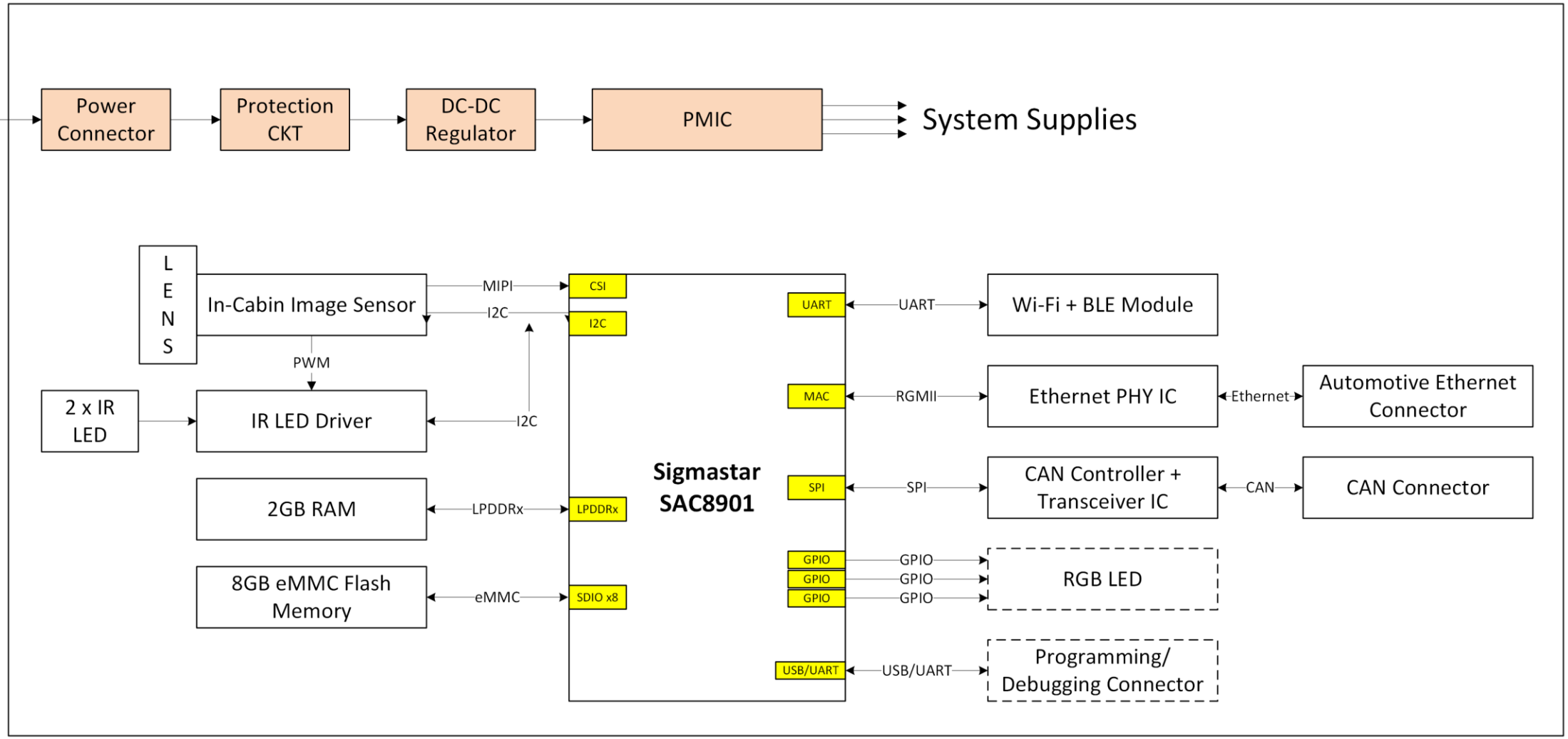

Scope of Work: DMS Dashcam Development

PRD & Technical System Architecture

- Product Requirement Document (PRD) Finalization
  - Functional Requirement Specification
  - Hardware Requirement Specification
  - Firmware Requirement Specification
  - Mechanical Requirement Specification
  - Final Acceptance Criteria
  - Test Cases

- System Requirement Specification (SRS) Finalization
  - Technical Architecture
  - System Block Diagram
  - Evaluating technical options
  - System Technology Component Finalization
  - System Technology Communication Flow
  - Technical Architecture Design and Approval
  - Final Acceptance Criteria

Hardware Development

- Component Selection for Main PCB
  - Power Supply Components
    - Power Connector
    - Protection CKT
    - EMI Filter
    - PMIC
    - Power Management Section
  - Processor
  - In – Cabin Camera Module
  - In – Cabin Camera Lens
  - IR LED Driver
  - 2 x IR LED
  - 2GB RAM
  - 8GB eMMC Flash Memory
  - Wi-Fi + BLE Module
  - Ethernet PHY IC
  - CAN Controller + Transceiver IC
  - RGB LED
  - Automotive Ethernet Connector
  - CAN Connector
  - Wi-Fi Antenna Main CKT + Antenna
  - Programming/Debugging Connector
  - PCBA Mechanical Components
  - Other passive components
- Schematic design for PCB
- Layout design for PCB
  - Footprint design for PCB
  - Component Placement as per the enclosure design
  - Routing
    - Impedance matching and designing
- Gerber files Preparation for PCB
- Prepare hardware test cases and plan for PCB
- DFMEA for Electrical and Mechanical Design
- PCB Fabrication and Component Procurement
- PCB Assembly
- Board Bring-up for PCB and Functional testing

Scope of Work: Phase 2 EVT Prototype Development

Hardware Development

- Testing and Bug Fixing for PCB
- PCB testing with Enclosure fitment validation
- Pre-Compliance Testing For EVT Units
    - EMI/EMC Testing

Firmware Development

- Development Environment Setup
  - Processor
- Independent Module Development
  - Power Supply Components
    - PMIC
    - Power Management Section
  - In – Cabin Camera Module
  - IR LED Driver
  - 2 x IR LED
  - 2GB RAM
  - 8GB eMMC Flash Memory IC
  - Wi-Fi + BLE Module
  - Ethernet PHY IC
  - CAN Connector + Transceiver IC
  - RGB LED
- Wi-Fi Connection and Establishment
  - Create Wi-Fi Access Point
  - Prepare Read/Write characteristics
  - Data exchange Preparation with Mobile App/Router
- Features
  - Algorithm Development for FIFO based Memory Organization when the Memory is full or when the user deletes it manually
  - AI Application Implementation into the Firmware
    - Frame Capturing
    - Frame Pre-Processing
    - Feed the Frames to the Application
    - Application Deployment
      - DMS Models
  - **Continuous Recording:** Continuous Recording should via ignition data received from CAN
  - **Event Based Recording:** Starting the recording for 20 seconds when there is a trigger from CAN Data
  - **Manual Recording:** Dashcam should start the recording when the Physical Button is pressed or the signal is passed through the mobile application

Firmware Development

- Event Management/Scheduling
  - Developing, maintaining and communicating event schedules
  - Transmitting the Data to the Mobile Application through Wi-Fi
- Integration with the Actual Hardware
- OTA Updates through Wi-Fi From Mobile Application
- Testing
- QA/QC

Mechanical Development

- Product Specification Inputs
  - Implementation and Optimization of Existing Process for Specifications mentioned
  - Generating Inputs according to specifications
- Product Conceptualization
  - Concept Generation and Product Architecture
  - Electromechanical Integration and Implementation
  - CAD Generation and Analysis for Requirement
  - IP Ratings & Degree (IP XX)
- Product Design and Development
  - Finalization of Design after Review
  - Implementation of Engineering Tools for Optimum Manufacturing Concepts.
  - Proto Development
  - Testing and Validation of Product according to Standard of Design.

Scope of Work: Phase 3 DVT Prototype Development

DVT Development & Certification

- Component Re-Evaluation as per Pre-Compliance Testing
- Schematic Design & Layout Design Revision
- Hardware Noise Cancellation, Cross Talk Removal
- Signal Integrity & Power Integrity
- Power Optimization
- ICT Test Point Implementation
- Gerber Release
- PCB fabrication
- PCB Assembly
- Board Bring up for PCB
- Functional testing
- Documents for PCB
- QA/QC
- Certification – DVT Units
  - FCC, UL, RoHS, PTCRB, AIS-184
- Firmware Support & Bug Fixing (Long run & Corner Cases)
- Software Features Modifications & Optimization
- Bench Level testing

PVT Development

- Hardware Revision 3.0
  - Component Re-Evaluation As per Certification
  - Hardware schematic Design
  - Layout redesign after certification
  - ICT Test points implementation (If any Changes)
- Firmware Support & Bug Fixing
  - User Feedback Implementation & Optimization
  - Functional Test Software (Firmware/Script/Desktop Tool)
  - Health Test Application
- Power optimization from Application Perspective
- Latency Optimization for Video Streaming
- Testing and EOL App
- Product and API Documentation
- PVT Manufacturing and Testing
- Field Trials: Installation in 2 vehicles for extensive field trials for 1–2 months

Exclusion (Available Exclusively on Demand)

1. Device side application Development
2. Android/iOS Mobile Application Development
3. Web/Cloud Development
4. Audio Tuning
5. Standalone Application Development
6. Any AI Algorithm Development
7. ICT Architecture Planning and Setup
8. FCT Architecture Planning and Setup
9. Certifications Related Development
    1. Security Testing and Audit
10. Mass Production Related Activities
    1. Automated Testing Activities
    2. Test Automation Framework
    3. Whitebox / Blackbox Testing
    4. Test Jig & Test Automation
    5. Alternate part finding while production
    6. Security and Penetration Testing

Dashcam BOM: Per Unit Cost for 500k Units MOQ (Tentative)

#	Variants	Tentative Unit Costs for 500K MOQ
1	Texas Instruments AM62x	~INR 3,380
2	NXP i.MX RT1060 Crossover MCU	~INR 3,310
3	NXP i.MX 9352	~INR 3,630
4	Sigmastar SAC8901	~INR 3,320

Project Milestones

Project Development Milestone and Timeline (Phase 1 to Phase 4)		
#	**Development Milestone**	**Approximate Calendar Weeks**
M0	Official Project Kick-off	T0 + 0

M1	**Phase 1: PRD & Architecture Development**
	• **Hardware Development:**
	  • Component Selection for PCB (Delivered)
	  • Schematic design for PCB (Continued...)
	• **Firmware Development:**
	  • Development Environment Setup
	• **Mechanical Development**
	  • Product Specification Inputs Implementatio
		T0 + 4

M2	**Phase 2: EVT Prototypes Development**
	• **Hardware Development:**
	  • Component Selection for PCB (Delivered)
	  • Schematic design for PCB (Continued...)
	• **Firmware Development:**
	  • Development Environment Setup
	• **Mechanical Development**
	  • Product Specification Inputs Implementation	

M3	• **Hardware Development:**
	  • Schematic design for PCB (Completed...)
	  • Layout design for PCB (Continued...)
	• **Firmware Development:**
	  • Development Environment Setup (Continued...)
	  • Features Development
	• **Mechanical Development**
	  • Product Conceptualization	

Complete Project Commercials

Dashcam Project Ballpark Engineering Cost Bifurcation

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Complete Dash Camera Project Ballpark Delivery Timeline and Engineering Costing: Phase 1 to Phase 4						
#	**Phases**	**Services**	**Type**	**Man Hours**	**Engineering NRE**	**Timeline In Weeks**
Official Project Kickoff						**T0**
1	Phase 1	PRD & Architecture Document	Engineering NRE	160	₹3,48,000	T0 + 2
2	Phase 2	EVT Prototype Development NRE: Hardware Development	Engineering NRE	960	₹20,88,000	T0 + 12
3		EVT Prototype Development NRE: Firmware Development		960	₹20,88,000	T0 + 12
4		EVT Prototype Development NRE: Mechanical Development – ID Design		480	₹10,44,000	T0 + 12
5		EVT Prototype Development NRE: AI Development		480	₹10,44,000	T0 + 12
6		EVT Prototype Development NRE: Manual Testing – QA/QC		160	₹3,48,000	T0 + 12
Total Cost of Phase 1 + Phase 2				**3200**	**₹69,60,000**	**~ 3 Months**
3	Phase 3	DVT Prototype Development NRE - (Spin 2) Hardware, Firmware, Mechanical Revisions, Manufacturing, Cert Support and DFA/DFM.	Engineering NRE	320	₹6,96,000	T0 + 18
4	Phase 4	PVT Prototype Development NRE (Spin 3) Feature Modification (If needed), Component Replacement, DFA/DFM.	Engineering NRE	160	₹3,48,000	T0 + 22
Total Cost of Phase 3 + Phase 4				**480**	**₹10,44,000**	**~ 5 Months**
Complete Project Total Cost (Phase 1 to Phase 4)				**3680**	**₹80,04,000 + GST**	**~ 11 Months**

Complete Dashcam Project Ballpark Cost Bifurcation

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Complete Project Ballpark Delivery Timeline and Costing: Phase 1 to Phase 4 (All 3 Variants)						
#	**Phases**	**Services**	**Type**	**Eng NRE**	**Mfg NRE + COGs**	**Timeline In Weeks**
Official Project Kickoff						**T0**
1	Phase 1	PRD & Architecture Document	Engg NRE	₹3,48,000	-	T0 + 2
2	Phase 2	EVT Prototype Development NRE: Hardware, Firmware, Mech, QA/QC - (Spin 1)	Engg NRE	₹66,12,000	-	T0 + 12
3		EVKs for Firmware Development in Parallel of Hardware Development (Saves Time)	COGS	-	~₹4,35,000	
4		EVT Samples Production – 10 Units **(3D Printed)**	COGS + NRE	-	~₹4,35,000	T0 + 14
5		Any Vendor Fees, Travel Accommodation and Material Cost: Other EVKs, SDKs, etc.	COGS	-	~₹4,35,000	-
NRE and COGs Cost Bifurcation (Phase 1 to Phase 2)				₹69,60,000	**~₹13,05,000**	**~3.5 Months**
Total Cost for Phase 1 + Phase 2				**₹82,65,000**		
6	Phase 3	Pre-Certification of EVT Units (All Variants)	COGS (External)	-	~₹17,14,000	T0 + 16
7		DVT Prototype Development NRE - **(Spin 2 Development)** Hardware, Firmware, Mechanical Revisions, Manufacturing, Cert Support and DFA/DFM.	Engg NRE	₹6,96,000	-	T0 + 18
8		DVT Samples Production – 10 Units (PCBA)	COGS + NRE	-	~₹8,70,000	T0 + 20
9	Phase 4	PVT Prototype Development NRE (Spin 3 Development)	Engg NRE	₹3,48,000	-	T0 + 22
10		PVT Samples Production - 30 Units (PCBA)	COGS + NRE	-	~₹10,87,500	T0 + 24
NRE and COGs Cost Bifurcation (Phase 3 to Phase 4)				**₹10,44,000**	**~₹36,71,500**	**~2.5 Months**
Total Cost for Phase 3 + Phase 4				**₹47,15,500**		
Complete Project NRE and COGs Cost Bifurcation (Phase 1 to Phase 4)				**₹80,04,000**	**~₹49,76,500**	**~6 Months**
Complete Project Total Cost of (Phase 1 to Phase 4)				**₹1,29,80,500**		

Payment Schedule

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Development Payment Schedule			
#	**Activity**	**Weeks**	**Amount**
1	Payment - 1 and Project Kickoff Advance	T0	₹18,49,000 + GST
2	Payment – 2 Triggered Upon Completion of Milestone 2	T0 + 8	₹15,12,826 + GST
3	Payment – 3 Triggered Upon Completion of Milestone 3	T0 + 12	₹15,12,826 + GST
4	Payment - 4 Triggered Upon Completion of Milestone 4	T0 + 16	₹15,12,826 + GST
5	Payment - 5 Triggered Upon Completion of Milestone 5	T0 + 20	₹15,12,826 + GST
6	Payment - 6 Triggered Upon Completion of Milestone 6	T0 + 24	₹15,12,826 + GST
7	Payment - 7 Triggered Upon Completion of Milestone 7	T0 + 28	₹15,12,826 + GST
8	Payment - 8 Triggered Upon Completion of Milestone 8	T0 + 32	₹15,12,826 + GST
9	Payment - 9 Triggered Upon Completion of Milestone 9	T0 + 36	₹15,12,826 + GST
10	Payment - 10 Triggered Upon Completion of Milestone 10	T0 + 40	₹15,12,826 + GST
11	Payment - 11 Triggered Upon Completion of Milestone 11	T0 + 44	₹15,12,826 + GST
12	Payment - 12 Triggered Upon Completion of Milestone 12	T0 + 48	₹15,12,740 + GST
		Total Cost	**₹1,84,90,000 + GST**

Next Steps : Rapidise's RFQ to FDR Cycle- Currently at Step 3, Commercial Solutioning

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01.

RFQ
Request For Quotation

Submitted by Client

→ Requirement Gathering Process Initiated

02.

Architecture Solutioning

Presented by Teksun

→ Initial Requirements & Development Approach

→ Approved by Client

03.

Commercials Solutioning

Presented by Teksun

→ Ballpark Timeline, Efforts, & Costing

→ Approved by Client

04.

Project Proposal

Presented by Teksun

→ SoW, Team Plan, Milestones, Payment Terms

→ Approved by Client

05.

PO
Purchase Order

Issued by Client

→ Project Kickoff Amount Released by Client

06.

Project Kickoff

Phase 1, Design

→ Product Requirement & Technical System Architecture Documentation

07.

Design Delivery

Phase 1, Design

→ Mutual Sign-off on Phase 1

→ Release of all Phase 1 Deliverables

08.

Development Kickoff

Phase 2, Development

→ Agile- Continuous Sprint Release Cycle

09.

Product Delivery

Phase 2, Development

→ Inspection & Testing of Phase 2 Product by Client

10.

FDR
Final Delivery Report

Presented by Teksun

→ Acknowledging All Requirements Met

→ Project Closure Payment Released by Client

→ Mutual Sign-off on Project Closure

→ Final Release of all Deliverables to Client

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IoT Product Engineering

Artificial Intelligence & Machine Learning

Digital Transformation

Electronics Manufacturing

PCBA & Full Product Assembly

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