



Introduction

MothersonSumi INfotech & Designs Limited

Security level: For Intended Recipients Only

March 25, 2022

**Proud to be
part of our
customer's
success**



MothrsonSumi INfotech & Designs Limited

Automotive Solutions & Services

motherson 

Mother'son Group Business Divisions.



MIND is proud to be part of **Mother'son's** diversified business portfolio



Wiring Harness



Vision Systems



Modules & Polymer Products



Technology & Industrial Solutions



Metal Products



Retail & Services



Aerospace



Logistics



Health & Medical



Automotive Practice Overview



Who We Are

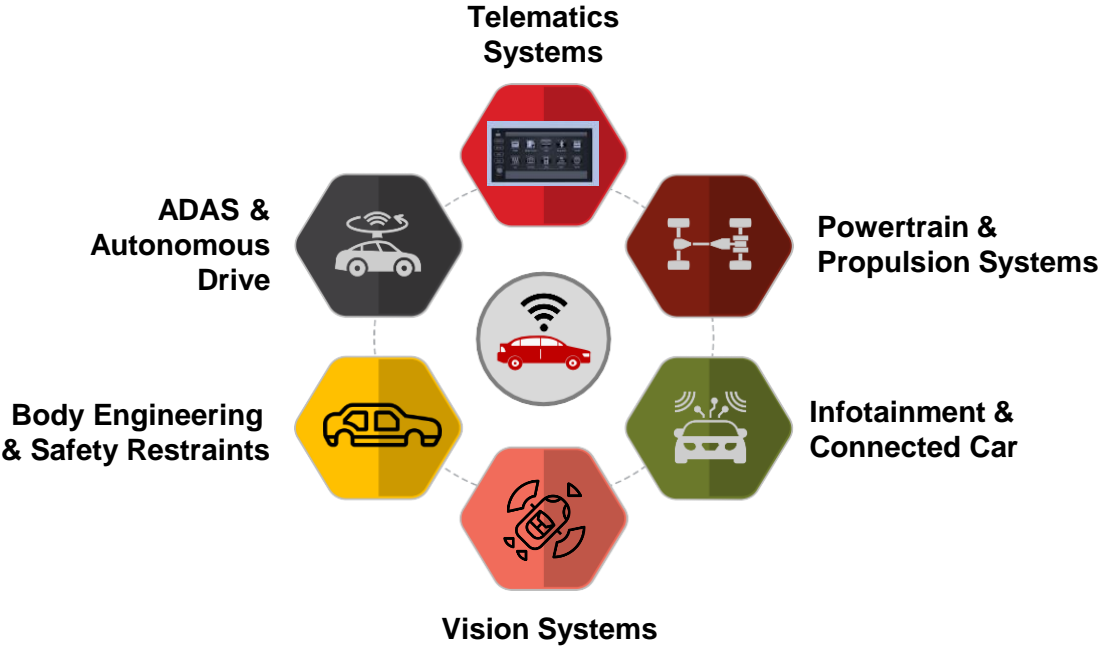
1600+ Engineers & Specialists

30+ Years of Experience

Working with almost 80% of the **Global Automotive OEM**

World's First in **Vision Systems & Electricals** with Over **600 Patents**

Over **50+ Patents** in **ADAS**



Key Initiatives and Investments

Design Assurance Lab, ISO/IEC 17025:2017 [NABL] Certified Laboratory

Infotainment Platform

Comprehensive Telematics platform/solution

World No 1 in Vision & Mirror System, Electric Design & Displays

System Engineering	Software Development	Hardware Design	Mechanical Engineering	Verification & Validation	Specialized Services
<ul style="list-style-type: none">• Requirements Specification• By-traceability of Requirements• Functional Safety : ISO 26262• System Architecture• Signal flow• Vehicle msg data base• Vehicle Integration• Vehicle Verification	<ul style="list-style-type: none">• AUTOSAR Compliant software development• Model Based Engineering• Functional Safety: ISO 26262• HMI• Control Algorithms Development• Diagnostics• Platform Software	<ul style="list-style-type: none">• PCB Design• Schematic creation• Safety Engineering : ISO 26262• Design Analysis (thermal, Reliability, EMI/EMC, Timing, WCCA)• Hardware Software Integration• Prototype Production	<ul style="list-style-type: none">• Chassis & Axle Design• Interiors and Cab Design• HVAC• Electrical Design• Plastics engineering• Manufacturing Engineering services• Body Engineering (CFD, FEA & Correlation)• PLM and VAVE	<ul style="list-style-type: none">• Interoperability Testing• System & Integration Testing• Road Testing• Functional Test Automation• HiL/SiL/MiL• Pre-Compliance testing (EMI/EMC/ ENV)• EOL / Bed of Nails Test Fixture• In-house accelerators	<ul style="list-style-type: none">• Cloud to Cockpit• Solutions• Product Localization• Sourcing• Should Costing

Mind's Commercial & Passenger Vehicle Engineering Value Centre



ENGAGEMENT STARTED IN 2013



7+ yrs. of continuous relationship with
Global Automotive Component Manufacturer



Continuously meeting expectation throughout
the engagement – CSAT Rating **4.5/5**

PRODUCTS DEVELOPED & SUPPORTED



DOOR



VISION SYSTEMS



BUMPER



CABIN



SIDE RAILING



CONSOLE



MIRROR

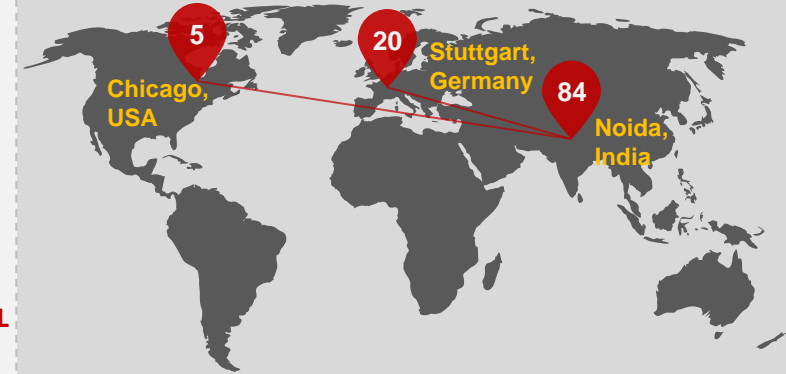


INTERIOR EXTERIOR



INSTRUMENT PANEL

ONSITE – OFFSHORE TEAM



MIND SERVICES & VALUE ACCELERATORS

CONCEPT TO MANUFACTURING UNDER ONE ROOF



ENGINEERING & DESIGN

- Product Engineering
- Product Design & CAD modeling
- Benchmarking & Tear down
- Packaging Study
- Manufacturing Feasibility
- Process & SE Activity



VIRTUAL VALIDATION

- Design Validation
- Material Flow Analysis
- FEA Modeling
- NVH & Structural Analysis
- Static & Impact Analysis
- CFD Analysis



PROTOTYPING

- Soft Tooling : Injection Mold, Blow Mold, Pressure Die Cast (PDC)
- Rapid Proto
- (CNC Machined Plastic)
- Sheet Metal BIW Prototype
- Jigs, Gauges & Fixtures Design & Development



TOOL DESIGN

- Plastic Injection Mold
- Sheet Metal (Forming)
- Pressure Die Cast (PDC)
- Jigs, Gauges & Fixtures Design

Project Management

Infotainment & Driver Information System

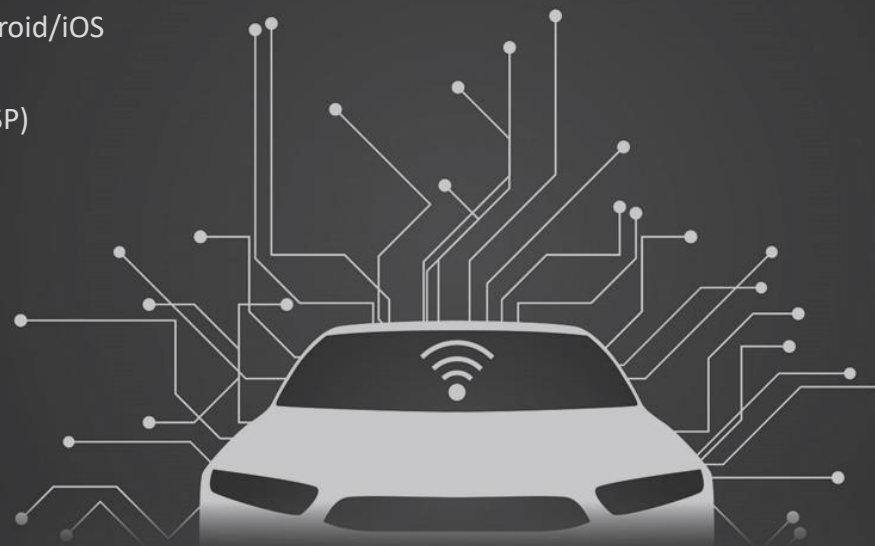
- HMI Design, Development & Validation
- Instrument Clusters / HUD
- End-to-end design, development & testing of Android/iOS based in-vehicle Infotainment
- Platform Software and Board Support Package (BSP)
- Mobility and Cloud Services

Automotive Common

- AUTOSAR & Functional safety Compliant software development (ISO26262)
- Model Based Engineering
- Automotive electronic control unit (ECU) development
- Mobility & Application Services
- Platform integration & optimization
- Test & Test Automation

ADAS & Autonomous Drive

- Lane assist/control system development | Blind spot | Parking Assist | Drowsiness
- Software application development for camera, radar, ultrasound, LIDAR, fusion systems
- Vision based and deep learning AI algorithms
- Sensor Fusion & Sensing module development



Telematics Systems

- Remote Monitoring & Control
- Vehicle Tracking & Health
- Over-the-Air Updates
- Data Analytics Integration
- Integration of Third-party Components

Hybrid & Electric Mobility

- Development of Battery Management Software
- Packaging & Thermal Management
- Battery Performance Management
- Diagnostics application development

360° Telematics / 'Connected Vehicle' Solution



Software

System Engineering | Platform Software | Application Development | Integration of Third-party Components | DSRC | Integration Of ADAS | System Integration and Validation

Hardware

System Engineering | Board Design | Layout Design | WCCA and Simulation | EMI/ EMC pre-compliance Testing | Prototyping Support

Mobility

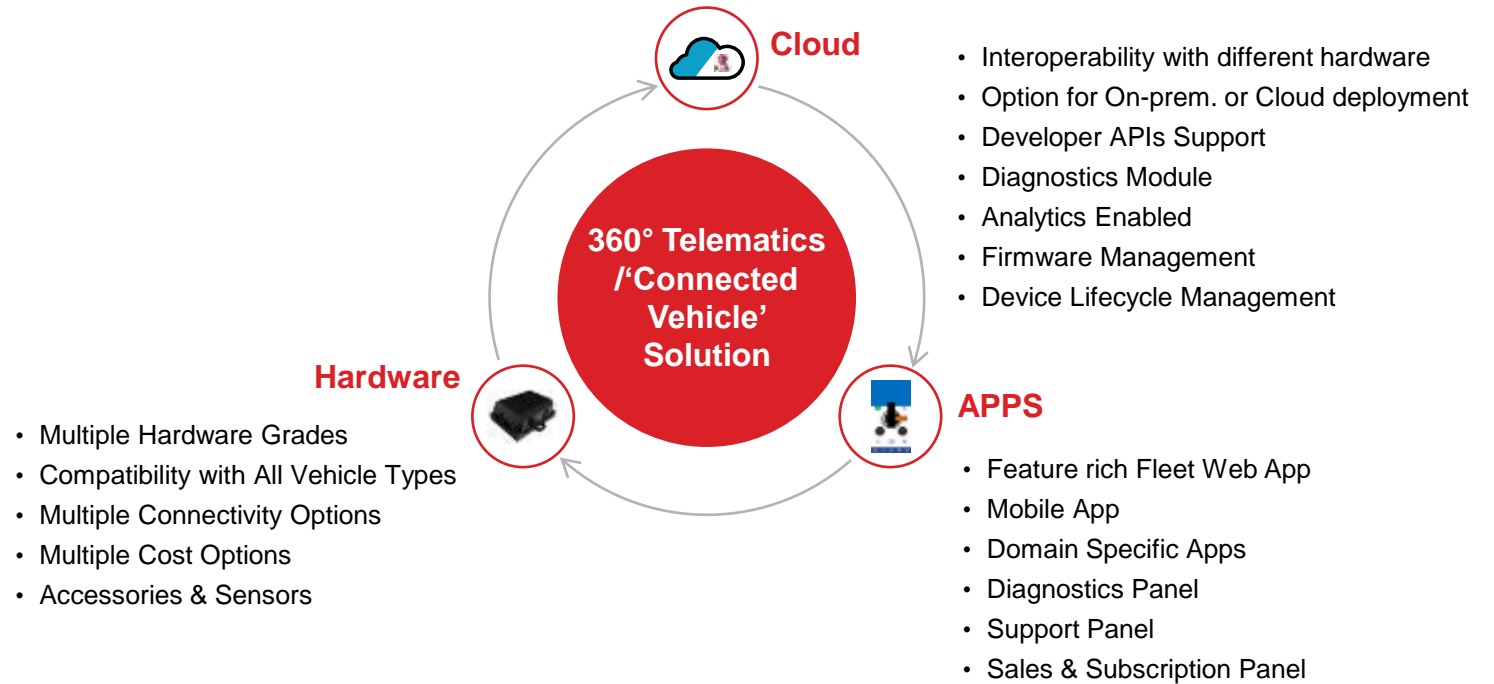
Cloud Implementation And Consulting | Cloud Integration | PaaS and SaaS | Platform Migration Support | Companion App Development | Data Analytics | Augmented Reality and Fleet Application

Security

Secure In-vehicle Networks | Authentication and authorization | Secure OTA | FW/ SW Updates | Penetration Testing

Connectivity

Driver Development and Integration | Functional and Certification Testing | Middleware and Distributed Communication Frameworks | 4G/LTE/3G | Telematics Gateway Design



Rollr Mini/Pro



- Vehicle Tracking
- Vehicle Health
- 2G/3G/4G
- Accelerometer
- Inbuilt Battery
- Driving Behavior

Rollr AIS-140 Basic



- AIS-140 Compliant
- Vehicle Tracking
- Vehicle Health
- 2G/3G/4G
- Accelerometer
- Inbuilt Battery
- Driving Behavior
- Custom I/O support

SOS Switch with Inbuilt Voice Calling



- GSM – 3G/4G
- Voice Call
- Switch for SOS

Rollr Pro v2 TCU



- Advanced Telematics
- Vehicle Tracking
- Vehicle Health
- Modem: 3G/4G

Telematics Control Products



Telematics : Features Suite



Intelligent Driving Pattern Analysis

- Front Lift Detection
- Hard Braking and Acceleration
- Driving Score
- Clutch Override
- Towing Detection

Incoming Voice Call Support:

With Rollr SOS switch OEM's can directly reach out to end-customers or can integrate Customer support

Vehicle / Battery Theft Alert:

Theft alert will be sent to the end-user on mobile application, If TCU is disconnected or Vehicle battery is removed

Remote Start Stop & Immobilization:

Ability to remotely start/stop the Vehicle engine along with immobilization functionality



Vehicle Identification/ Movement Alert:

Ability for OEM to identify multiple vehicles via Chassis Number at the stock yard

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Vehicle movement detected alert occurs when ignition is Off and Vehicle moves beyond a certain threshold (towing)

Fuel theft Alert:

A sudden drop in level of the Fuel will be notified to end-user via an alert in mobile application

Real time Vehicle Tracking:

End-user can track Vehicle location in real time using mobile application

Vehicle Health Parameters:

With I/O support remotely view:

- Air filter Choke
 - Coolant Temperature
 - Engine Oil Pressure
 - Hour Meter Reading (Agri)
 - Fuel Level
- and other vital engine parameters

Geo-fence Alert:

Set places on map such as your Farm-filed or Garage. Get notified on mobile when your Vehicle reaches or leaves that place



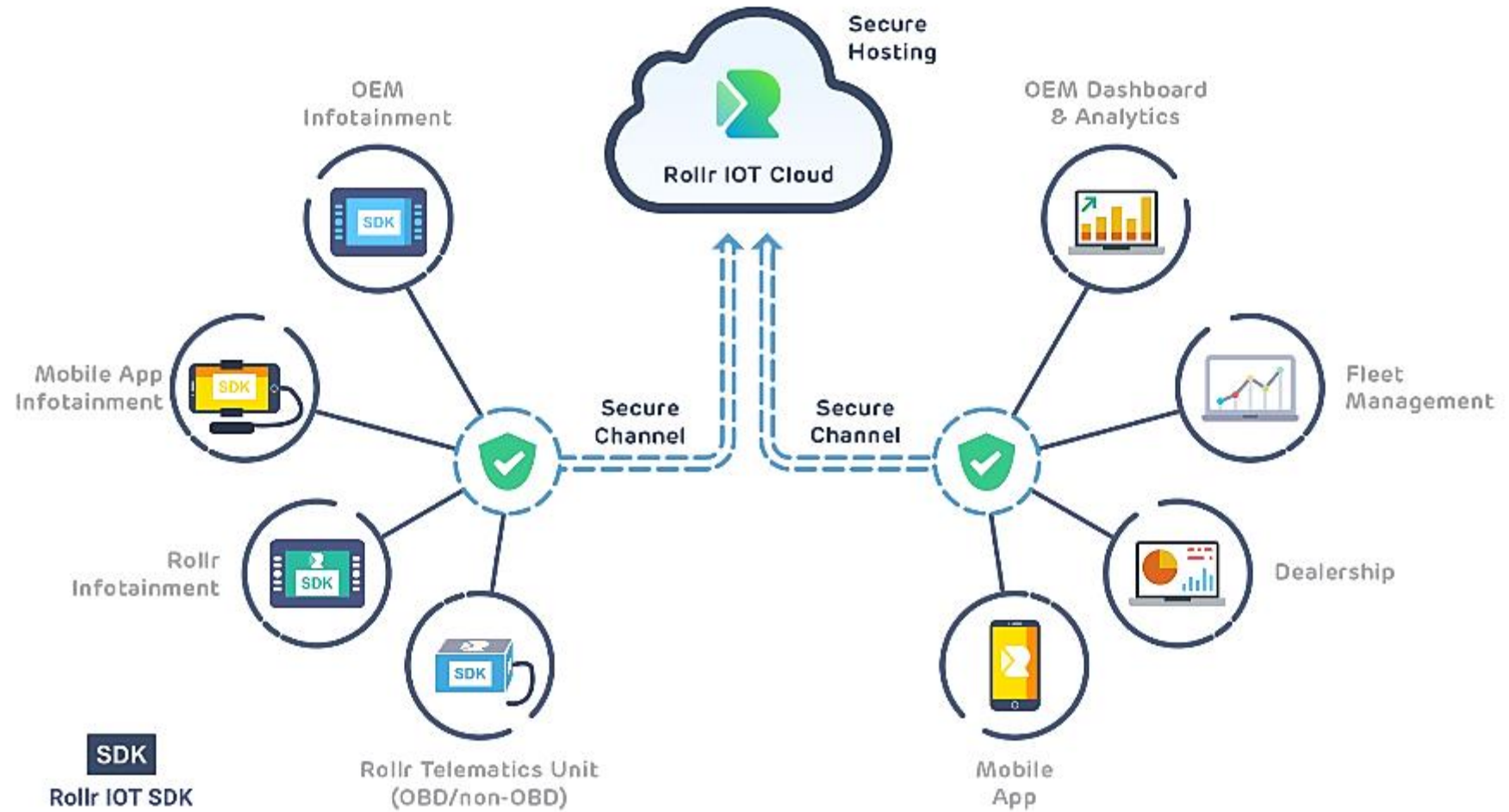
Rollr IoT Cloud Platform

Rollr IoT Cloud platform offers a secure and scalable architecture which helps customer to integrate and rapidly customize

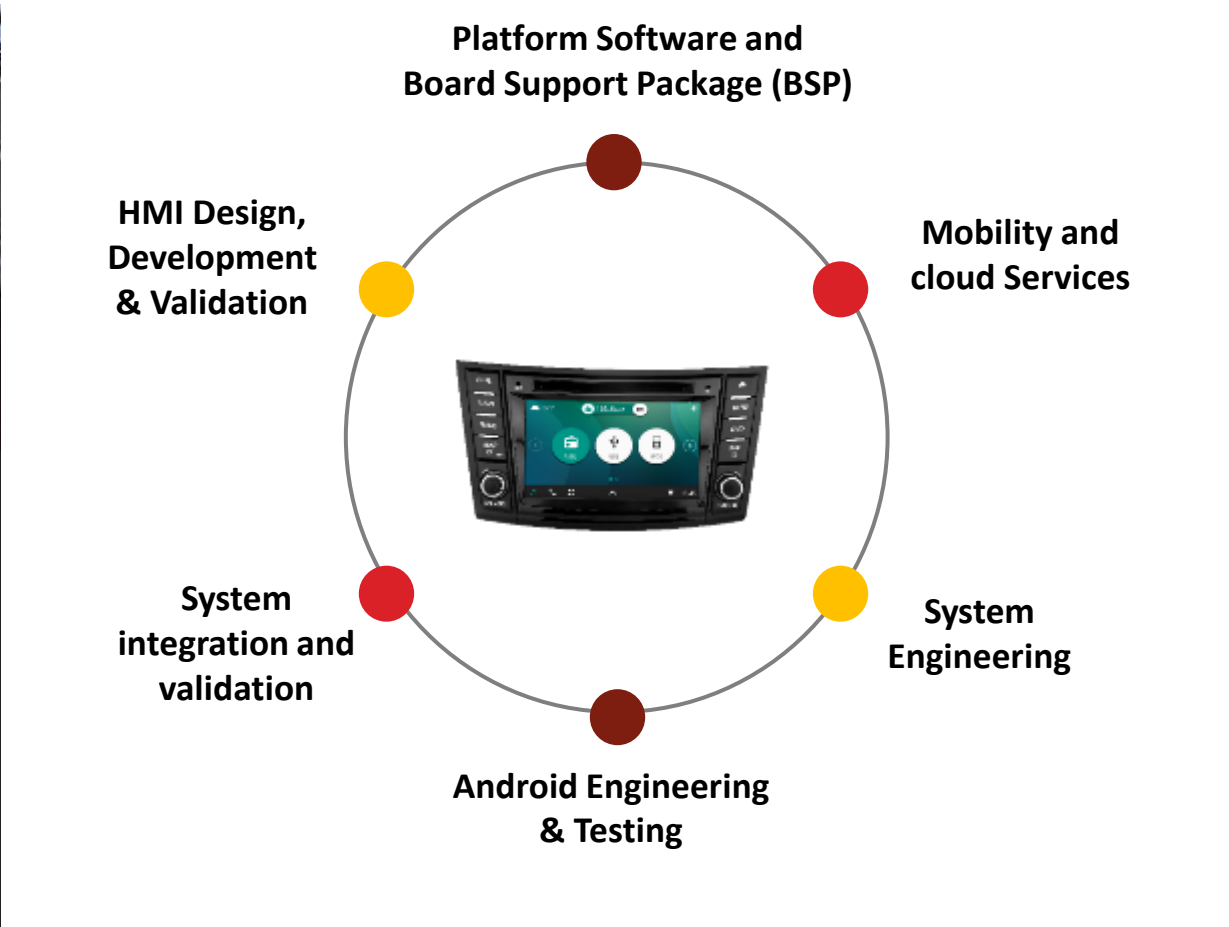
Components of our IoT Solution

- Device to IoT platform with built-in rule engine, stream processing and big data support
- Empowers customers for rapid customization and quick deployment of IoT products
- Enterprise applications connectivity via API
- End to end secured connectivity from edge to cloud to application

Rollr offers a complete suite of Hardware, Cloud & Applications software



Infotainment & Driver Information Systems



TEST AND TEST AUTOMATION OF COMPLETE INFOTAINMENT & TELEMATICS FEATURES

- Bluetooth Testing
- Audio Testing
- WiFi Testing
- Telematics Testing
- HMI Testing
- GPS & Connectivity Testing (4G/5G)
- Integration Testing

VALUE PROPOSITIONS

STYLING COE

Android Based Infotainment & Instrument Cluster

3G/4G Embedded Android based infotainment platform. Developed & Enabled a custom Drive-safe UI with OEM App store, Projection Mode (Car Play) and Full Telematics Integration.

MULTI YEAR PROGRAMS WITH OEMS AND TIER-1S

IN HOUSE HMI/USE EXPERIENCE COE

IN-HOUSE TEST AUTOMATION FRAMEWORK AND TESTER

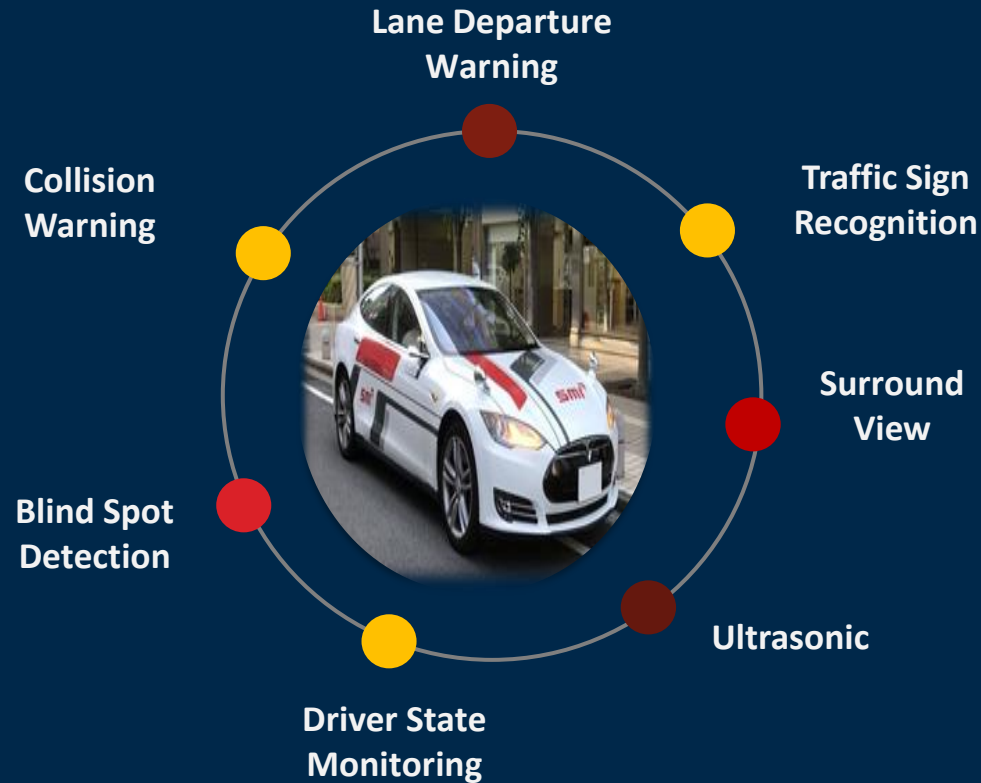
DEDICATED COE FOR MECHANICAL STYLING AND VALIDATION



ADAS & Autonomous Drive System Development Capabilities



ADAS Capabilities & Solutions



SERVICE OFFERINGS

Model Based Design

- Model based system engineering
- Control Algorithm development
- Model Based Design, Auto-coding and Integration

AUTOSAR & Functional Safety

- Platform Software development
- AUTOSAR & adaptive AUTOSAR
- Configuration & Integration
- Functional Safety Compliant

System Engineering

- SW Architecture definition
- Platform approach



Sensor Feature Development

- Customizable Vision Based Libraries
- Vision-based system development
- Sensor Fusion & Sensing module development
- Multi Sensor Capability

System Integration & Validation

- Algorithm porting & optimization
- Platform integration & Optimization
- Virtual test drive platform
- Data labelling & validation
- Custom test platform development

Hardware Design

- Hardware board design
- PCB design
- RF design, development & Simulation
- FPGA, ASIC design
- DFMEA, Reliability, WCCA,
- EMI/ EMC and Environmental



Rear camera



Cleaning system



Side camera pod



2.0Mpix sensor
LED Flicker mitigation



7.0" Display



ADAS Development Capabilities



Camera

- >2MP @60fps
- LFM
- HDR @120dB
- Commercial vehicle lifetime
- Glass lens structure for high IQ in low and high temperatures



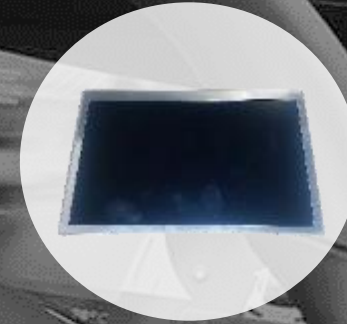
Electronic Control Unit

- ECU module designed, specified and engineered by AECQ100
- Full Functional Safety compliant ISO26262
- Commercial vehicle ENV compliance



Software

- Development Process completely integrated
- Mechanical + HW + SW = SY
- ASPICE conform
- ISO 26262 conform
- Certified by IATF16949



Display

- Full custom developed 12" and 15" displays in aspect ratio 16:9 / 3:8
- Multiple off-the-shelf displays for passenger vehicles 5"-10"
- Automotive and commercial vehicle compliance (lifetime)
- Full control of CMS related
- HMI



Pod

- Full mechanical solutions
- Wing package
- Display package
- Lighting (STI, PL, EL)
- ASIL impact solution

Motherson ADAS practice understand, specifies and develops/sources each component as part of an overall system , is aimed at automotive manufacturers who are driven by global consumer demand for greater safety. Our clients create intelligent vehicle systems using our capabilities across multiple technologies, computer vision, sensor fusion, analytics and our experience in V2X connectivity.

HMI Model Development

- Implementation of 3rd party HMI Model in to HMI Tool Chain
- HMI Application Support
- State Machine Script Writing Using HMI Tool Chain
- PC Based Simulation

Widget Management

- Creation of 3D widgets with Positioning, Orientation and Special Effects
- 2D and 3D Graphics Implementation using Advance Widget

Animation Effect

- Dynamic Animation
- Static Animation Management
- Animation Interface with External Events

Layer Management

- 3D Graphic Rendering via Multiple Layers
- Layout Designing
- Management Background, Resolution, Positioning Layout

Template Development

- Table List Template
- Background Template
- Button Template



A-Pillar Integration



Door Integration



Meter Integration



Motor bike Integration

Capabilities: Display

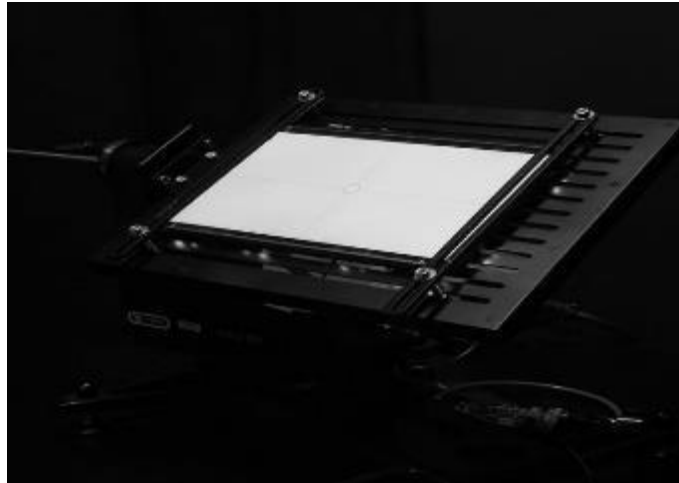


PCB

Component Engineering and Library Management | PCB Design Setup and Stack-up | Component Placement | Power Planes and Splits | Signal Routing and Length Matching | DFX, Pre-gerber, Gerber Release and Manufacturing Coordination

Communication

RF / Microwave System Design | RF / EM Simulation | Hi-speed SI and EMC Analysis | Rf Test and Validation



UI/UX

End-to-end Design Solutions | Usability Review and Testing | User Research | Navigation and Flow Design | Feature Enhancement/ Application Revamp | Task-Flow Analyses | Role Based and Access Based Functional Design | User testing (Client Labs) | Visual Design and Branding (GUI, GFX) | Accessibility Testing

Board Design

Product Conceptualization | Requirement Analysis | Feasibility Analysis | Architecture Design | Schematic Design | PCB Design | Design Analysis | Prototype Production | Bring-Up and Testing | System Integration & Validation | Production Support | Product Sustenance

Platform Software

Middleware and Apps | Stabilization | Optimization | Board Bring-Up | OS Porting | BSP, Device Driver |

OS Expertise

Reference Platform Development | Commercialization Partner | Version Upgrade Partner | Derivative product development | Customer Engineering Support | Apps Development and Customization | Country Customization | System Integration Support | Test ownership



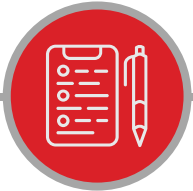
Embedded HW/ SW & Testing

Product Development Competency



Product Conceptualization

- Voice of Customer
- Market Requirements
- Functional Specs
- Strategic Research + Innovation + Design for Experience
- Product Benchmarking
- Mock-ups
- Preliminary Proof-of-Concept



Design & Development

- Architecture Design
- H/W Design
- S/W Design
- Hardware & Software Integration
- Industrial Design
- Product design and module development
- Geometric dimensioning & tolerancing



Validation

- CAE Meshing/Analysis
- Structural analysis
- CFD analysis
- Thermal analysis
- Prototyping
- Design Verification
- Material Characterization
- Environmental Screening
- Tear down
- Reverse engineering



Design Optimization

- Packaging Testing
- Technical documentation
- Reliability
- PCB Layout & DFX
- Cost Engineering
- VAVE



Manufacturing Support

- Design to SCM Integration
- BOM development
- Field Implementation & Training
- Supply chain and logistics
- Engineering Change Management
- Production support and design maintenance
- Field sustaining and performance monitoring



Aftermarket

- Obsolescence management
- Sustenance engineering
- Documentation support
- ETO/CTO
- PLM
- Field Service Maintenance

Service Lines

Mechanical Engineering

Electrical & Hardware

Embedded Software

Testing & Certification

Reliability Engineering

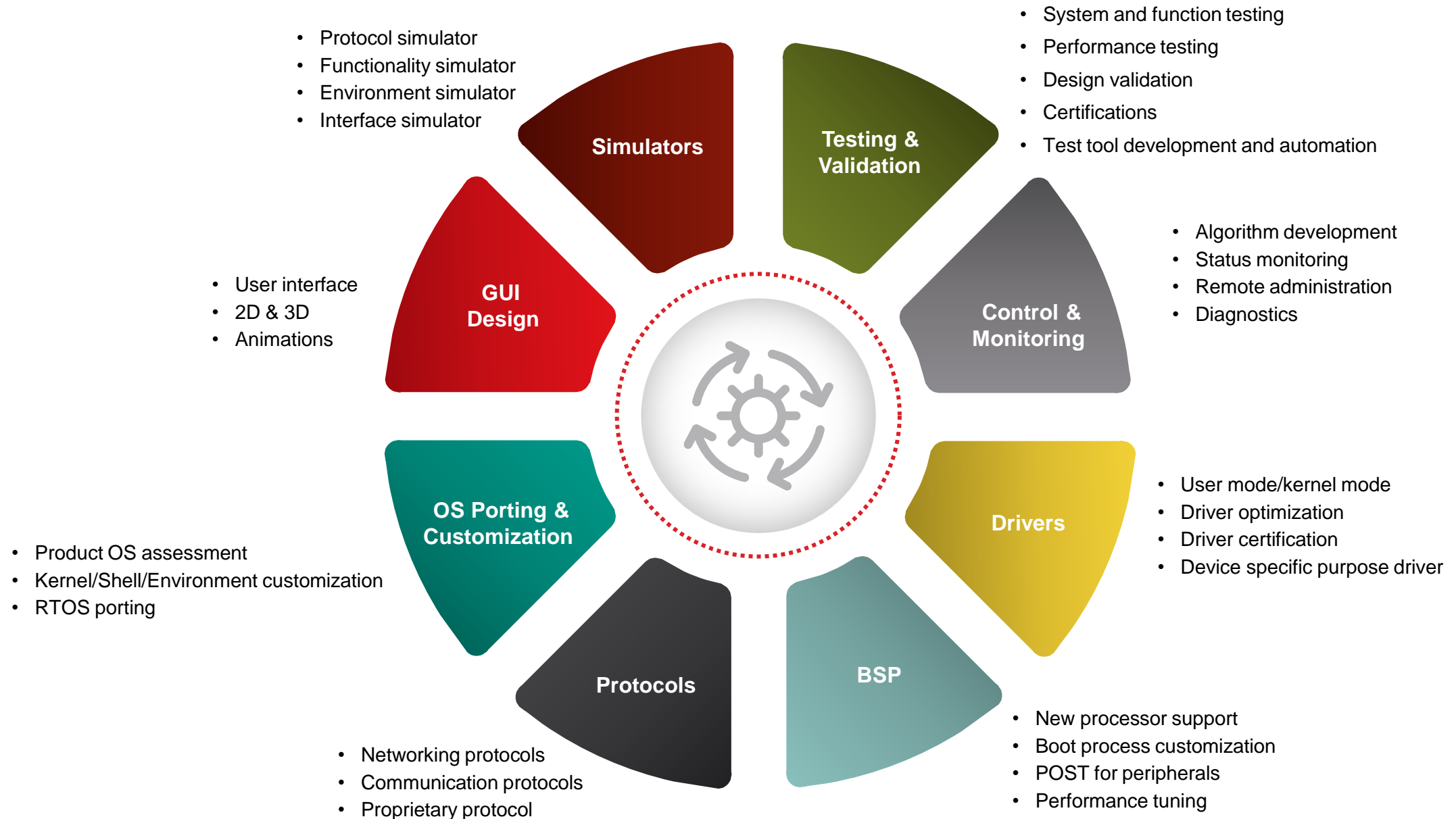
Cost Engineering

Application Development

Digital Engineering



Competencies I Embedded Software Engineering



Embedded Software tools & technology stacks supported

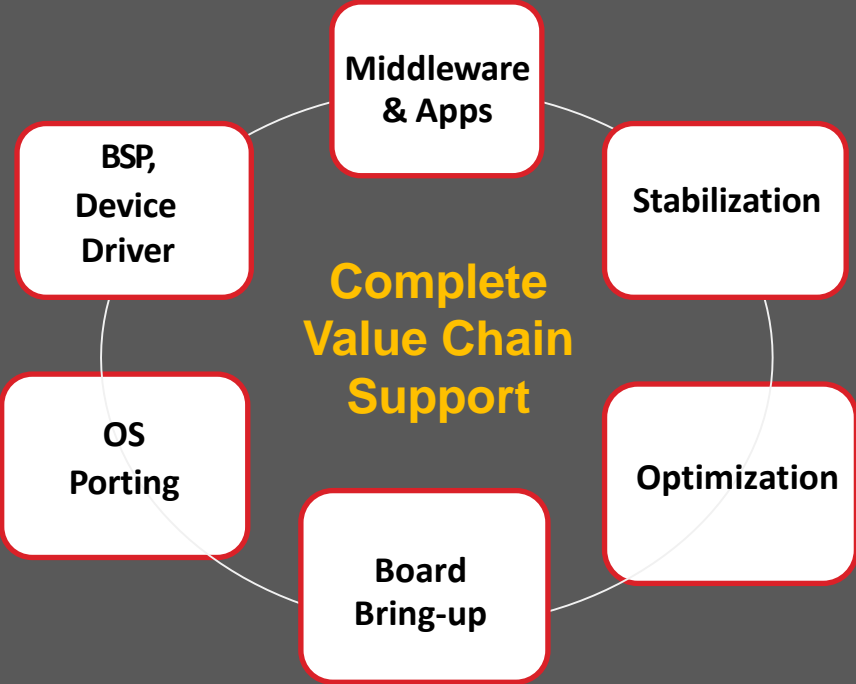
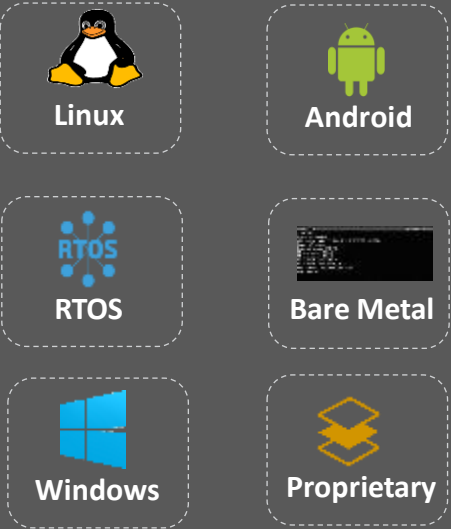


NPD, Platform & Driver / BSP Development & Standardization	Measure, Monitoring, Control & Application	HMI, Touch Panel & Handheld devices	Re-Engineering & Design Optimization	Remote Monitoring & Communication Protocols
Processors	TI DSP, Arm Cortex, ARM cores, Power PC, PIC, Intel x86 , Fujitsu RISC, NEC, National Semiconductor – Geode, Motorola HC12, Star12, 68HC05, HC08, Hitachi series , MIPS, Stellaris, Renesas, ATMEL, Multicore Processor (ARM and renesas)			
Sensor	Sensors-Humidity, Temperature, Speed, Proximity, Pressure, Magnetic, Imaging. Servo, Stepper & DC motors, Solenoids, Relays			
Device Drivers, BSP& Diagnostics	LCD, Touch Panel, Motors, CAN, USB, Video/Audio drivers, Ethernet, Keyboard, Serial, ADC, DAC, I/O, Hardware Init, Power-On-Self-Test, Diagnostic, Prod/Field Test & BSPs			
RTOS	Linux (custom OS toolchain configuration/customization, Linux file system), TI DSPBIOS, Thread X, Micrium, embOS, QNX, OSEK, VXWorks, Nucleus, RTLinux, WinCE, PSOS, SMX, Integrity (61508 compliance), Free RTOS			
Comm Protocols	CAN/J1939, MODBUS, NMEA 2000, CANOpen, USB, DeviceNet, Profibus, ProfiNET, ISOBUS, Serial (UART), Bluetooth, Zigbee, RSTP, TCP/IP, SNMP, EtherCAT, I2C, SPI, PCIE			
Embedded GUI Tools	QT, EmWin, Photon GUI, PEG, Micrium GUI, OpenGL, Empresent, OpenGL, Custom GUI			
Unit Testing Framework	Google Test framework, RTR, CPP, Vector, CANTATA, LDRA			
Static Tool Analyzer	LDRA, PC-Linit , Polyspace, Klockworks, CPPcheck, Coverity, Valgrind			

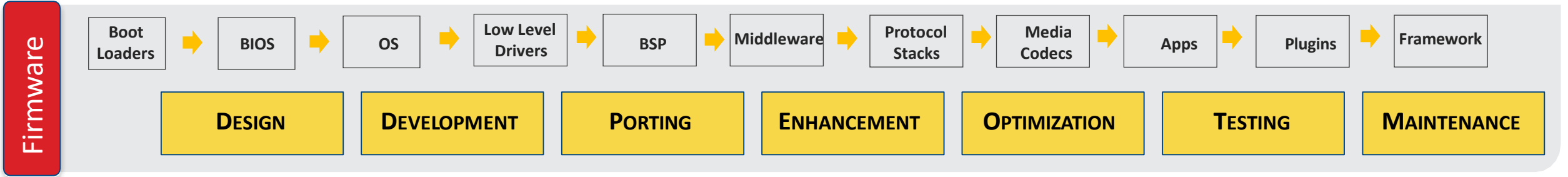




Platform Expertise



MIND Leverage capabilities, including board support package development, firmware, device drivers, protocols, and cross-platform porting to address challenges such as low power, small footprint, and low failure tolerance.



DESIGN

- Kernel space driver development for GPIO , I2C, SPI
- TTY driver customization for serial peripherals
- DMA based data transfers implementation
- Experience with buildroot based tools like Yocto to build and configure linux systems on 2.4.x / 2.6.x ARM kernels
- PMIC driver debugging for AM35x based platform
- Configuration of u-boot for Arm 9 and 11 platforms.
- Application modules developed on UCLINUX based ARM7 platforms
- Building cross compiler from GCC source
- Tool chains like CodeSourcey , Linaro TI Compiler etc

SOFTWARE

- Embedded OS (Linux, OpenEmbedded / Yocto, Androidm RTOSes: FreeRTOS, NuttX,etc.,
- Hardware and network communication protocols: USART/UART,I2C,SPI,MIPI DSI/CSI, Ethernet,LVDS
- IoT hardware and protocol design and implementation (COAP, MQTT, DTLS etc.,)
- Embedded security services (Threat modeling, Cryptography etc.,)
- Validation and verification



Competencies I Hardware Engineering

Concept



Architecture



Design



Design Analysis  Implementation

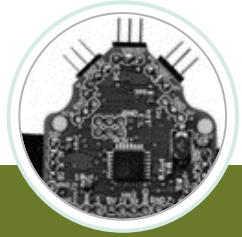
Testing



Validation

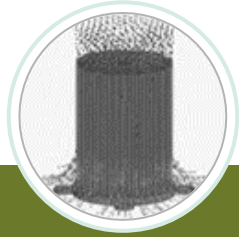


Manufacturing



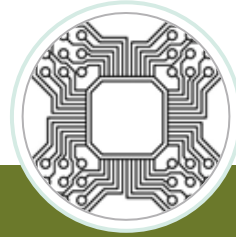
Board Design

- Digital Board Design
- Analog Board Design
- RF Design
- Power Supply Design
- High Speed Design
- Low Power Design
- Sensor Integration



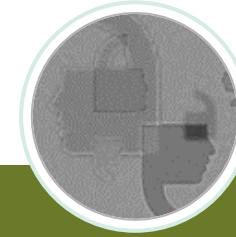
Design Analysis

- DFMEA & WCCA & FMEDA
- Hazard Analysis & FTA
- RF Simulation
- Power & Thermal Analysis
- Signal Integrity Analysis
- Design Simulation



PCB Design

- 32 Layers
- IPC Standards
- DFM/DFX Implementation
- Semi Flex PCB Design
- 12000 Components
- 1760 Pin IC



Service Area

- Value Engineering(VAVE)
- Components Engineering
- ROHS, WEEE, ATE
- Low Volume Manufacturing
- EMI/EMC Testing, Reliability Analysis, HASS, HALT
- Environmental Testing



Design Tools

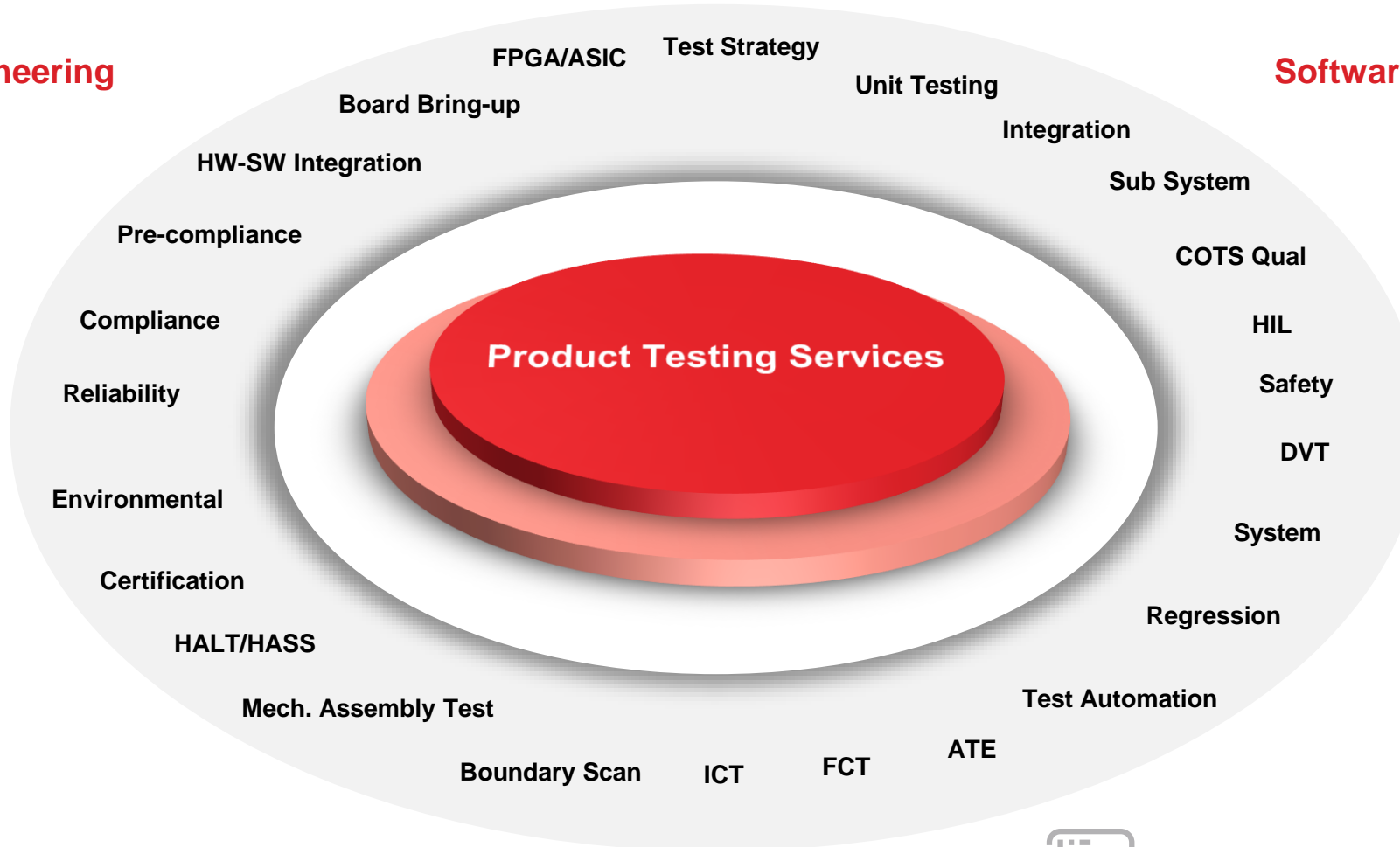
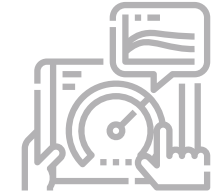
- Mentor, cadence, CAD-star
- Altium, CAM 350, Mathcad
- Timing Designer, HyperLynx
- PSPICE, SABER, ADS, HFSS ANSYS
- Part Miner

Test Engineering Practice

Hardware Test Engineering



Software Test Engineering



Manufacturing Test Engineering



Annexure:

Case References



Case Study

End-to-End Automotive Product Development



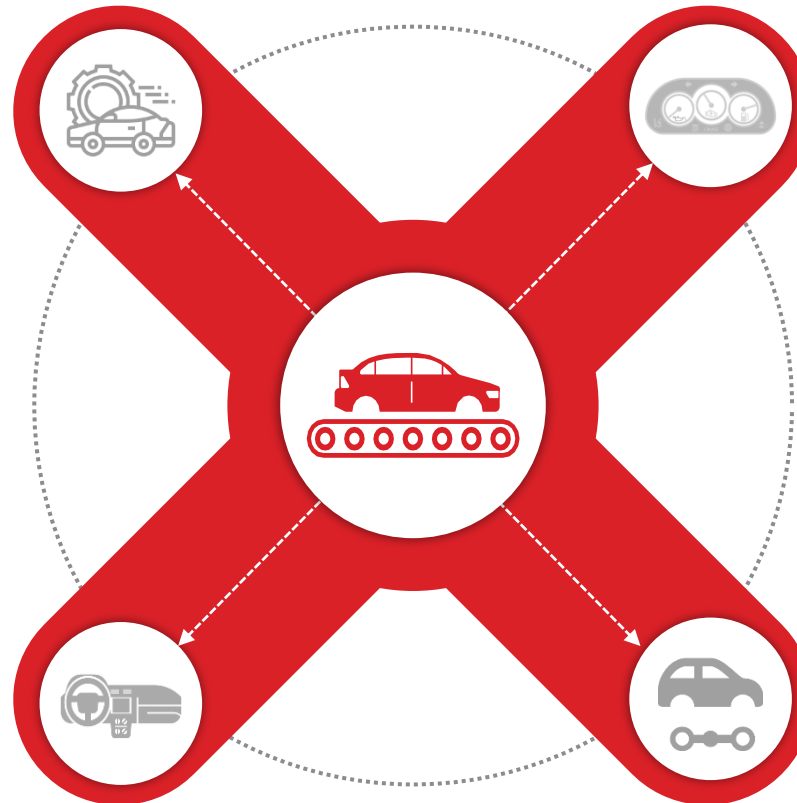
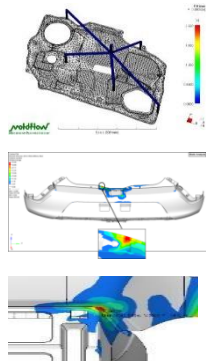
Automotive Product Design

- B-Surface Generation
- Detail 3D Modeling
- Tooling Feasibility
- Assembly Feasibility of Child Parts
- Mold Flow Analysis
- 2D Drawing Generation
- Prototyping (CNC Machining)



Validation

- Bending Stiffness test
- Thermal cycle analysis
- Vibration Analysis
- CFD Analysis
- Mold Flow
- Examining with test cases
- Test Suites
- Lab trials
- Simulated trials through mathematical modelling
- End to End Trace report & Trace Matrix



New Product Development

- Feasibility of Part from Design/manufacturing perspective.
- VA and VE at parts and assembly level
- Action plans for Product optimization and part maturity
- Assembly level testing and proposing solutions
- Process optimization
- Support the customer and production line
- Define RPS & SPC points
- Identifying the improvements & implementation



Industrial Design

- Product styling
- Packaging layout
- Product feasibility
- Product design
- Prototype development
- Final product design.



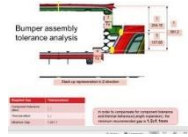
Case Study

End-to-End Automotive Product Development



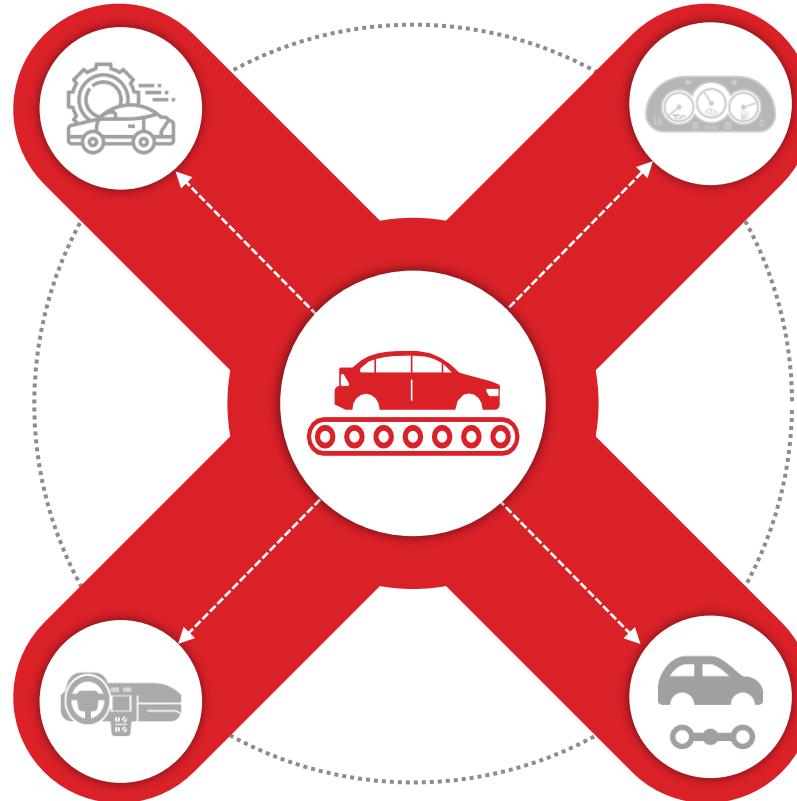
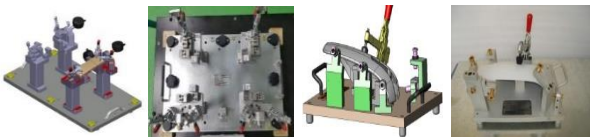
Stack up Tolerance

- Software (SMTOL) used for statistical tolerance design for tolerance stacks- calculation and optimization
- Potential Gap calculation based on dimensional aspects and thermal behavior.
- Tolerance analysis for different types of process for example : Molding , Gluing , punching etc. can be done.
- One dimensional and two dimensional
- stack-ups can be done.



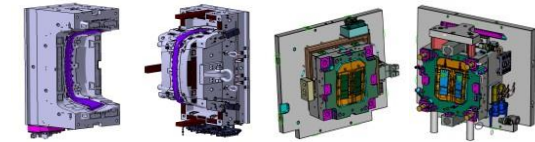
Gauge / Fixtures Design

- Checking fixtures
- Assembly gauges
- Gap and flush fixtures
- Position gauges
- Go-No go Gauges
- Special purpose gauges



Mold / Die Design

- Plastic / HPDC / LPDC / Gravity Dies
- Manufacturing feasibility of part as per the machining and ease of assembly process without compromising the quality.
- Complex lifters/sliders Kinematics check through
- simplified 3D models
- Demolding concept for complex parts within desired molding cycle to enhance production.



Reverse Engineering (Metal Plastic)

Inputs:

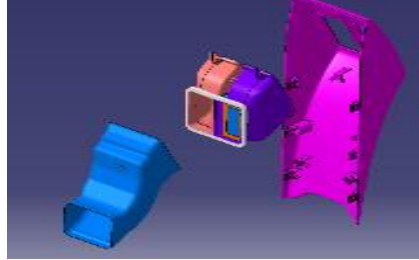
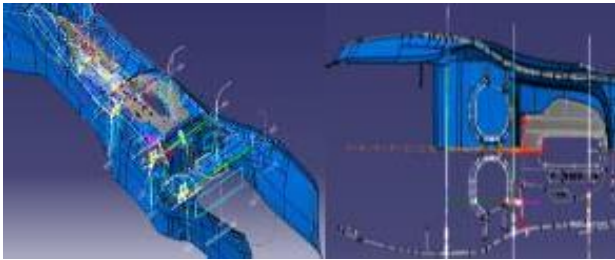
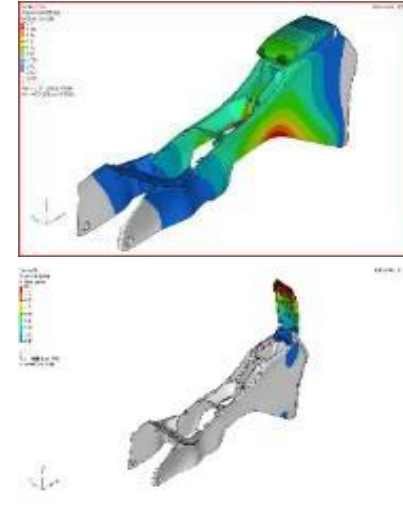
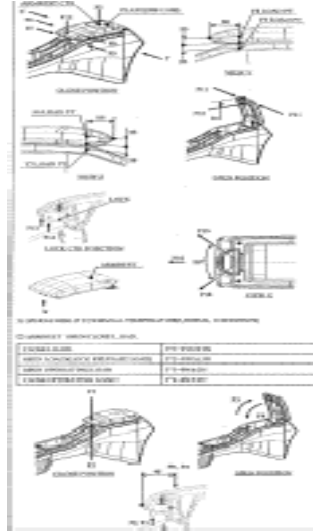
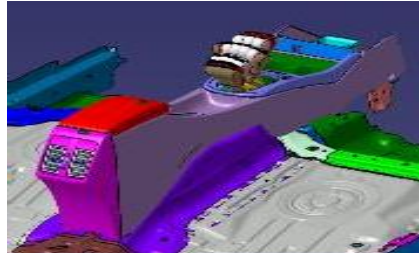
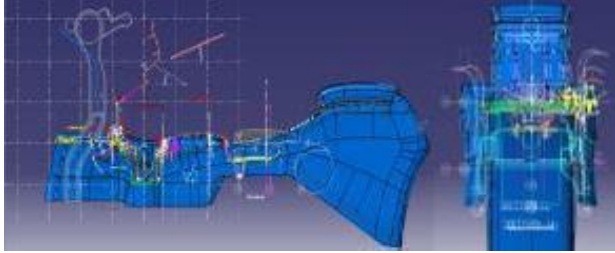
- Aluminum Part
- Requirement specification
- Testing specification

Value Delivered:

- CAE analysis of metal part
- Product re-design as per plastics
- Plastic material selection CAE analysis of new design
- Mockup prototype manufacturing
- Soft tool prototype manufacturing
- Product validation with customer

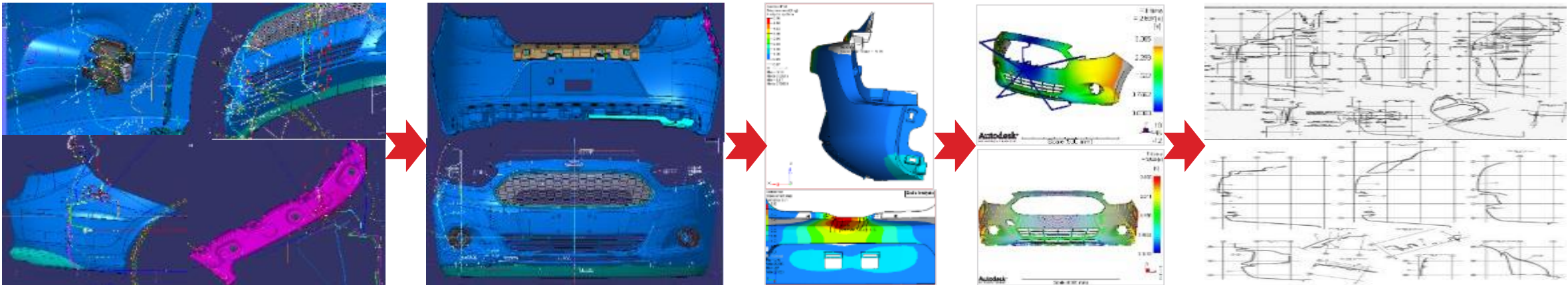


Case Study : Floor Console Development

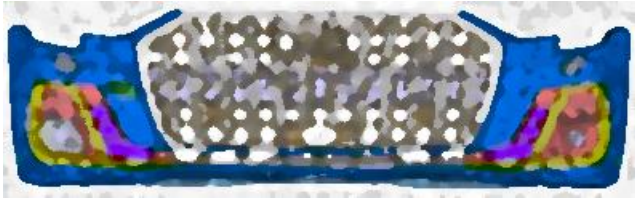


Project Scope	Product Development from Concept to mass production tooling release (Floor Console)
Input	Styling Data, Technical Specifications
Challenges	High Level Assembly Tear Down
Deliverables	Manufacturing feasibility, Packaging Study, Proto Part Design, Mock-up proto manufacturing, Design improvements, Soft tool prototype assembly, Product Design

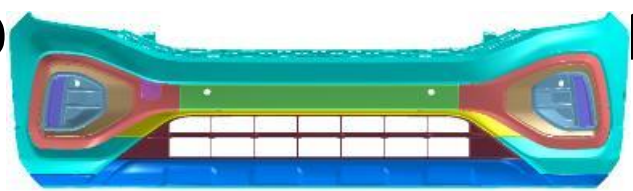
Case Study : Product Design: Front & Rear Bumper



Project Scope	Product Development from Concept to mass production tooling release (Front & Rear Bumper), Passenger Car Brazil, India
Input	Styling Data, Technical Specifications
Project Duration	8 months
Deliverables	Manufacturing feasibility, Packaging Study, Proto Part Design, CAE analysis, Design improvements, Product Design, Mold flow analysis, 2D detail drawing



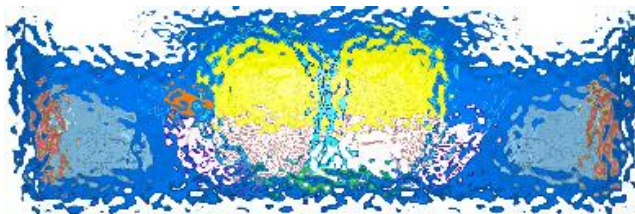
German OEM



German OEM



German OEM



German OEM



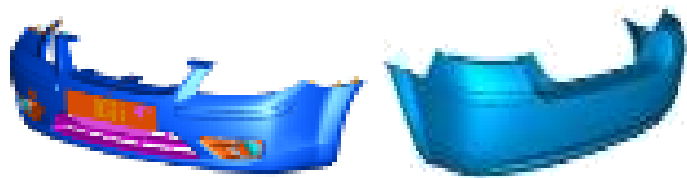
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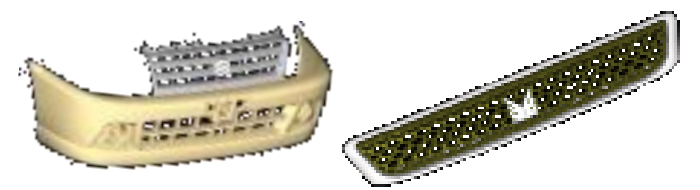
American OEM



Japanese OEM

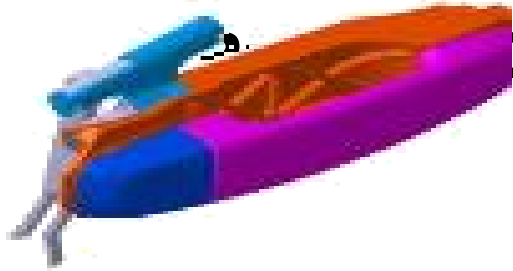


American OEM

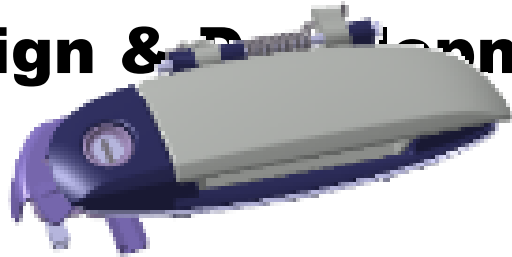


Japanese OEM

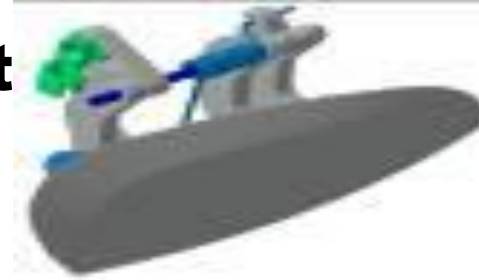
Design & Development Col



Japanese OEM



Korean OEM



Korean OEM



Korean OEM

Project Scope

Styling for A Surface
Master Section Generation
Detail 3D Modeling
Tooling Feasibility
Mold Flow Analysis
Prototyping (Soft Tooling)

Input

Styling Data
Technical Specifications
Class A surface
Surrounding data
Product specification
Product validation specs

Project Duration

~4 months

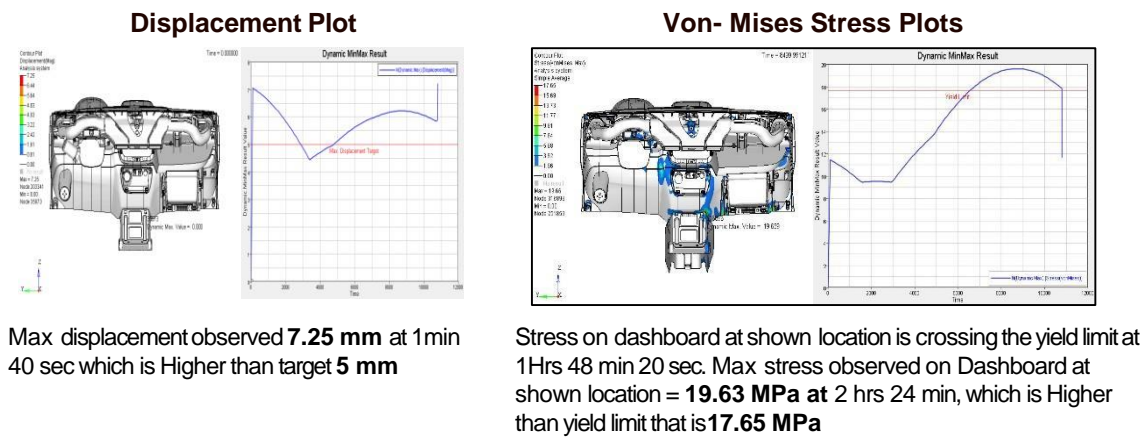
Deliverables

- Manufacturing feasibility
- Packaging Study & layout
- Proto Part Design
- CAE analysis
- Design improvements
- Product Design
- Mold flow analysis
- 2D detail drawing
- DFMEA

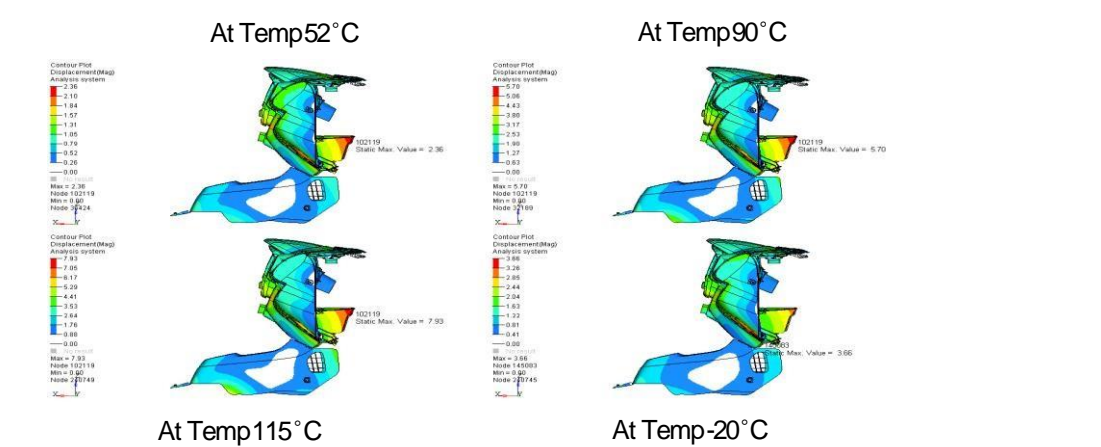
Case Study Collage : CAE Analysis



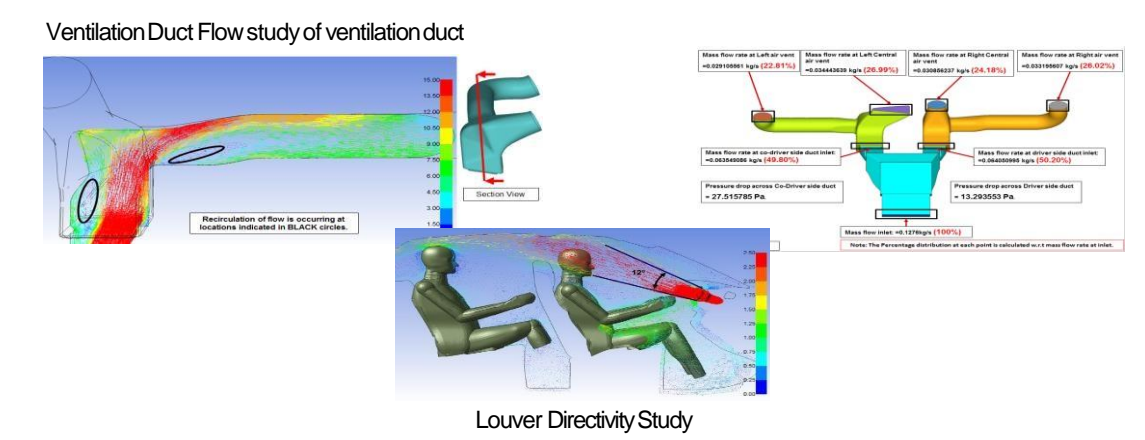
Vibration Analysis



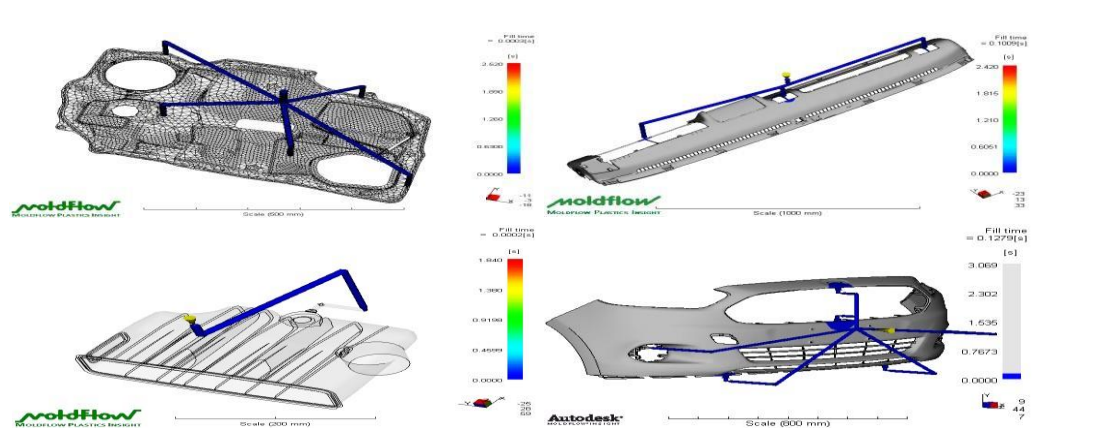
Thermal Analysis



CFD Analysis



Mold Flow Analysis



Connected Infotainment Solution -Turnkey Solution



Client

- Leading Japanese/ Indian Automotive OEM

Scope & Project Overview

- Turnkey project for End-to-end design, development and testing of Android/iOS based in-vehicle Infotainment, with 3G/4G connectivity.

MIND Responsibilities

- Schematics Design & Review, Board Design and Prototype Development
- Product Design and Development
- Platform Bring-up and Stabilization
- Complete System Integration
- Embedded Linux Porting, BSP & Device Drivers Development (SPI, I2C, CAN, UART, USB etc)
- Middleware Development – BT, Wi-Fi, GPS, Sensors, Audio DSP, Display
- End-to-end testing
- Pre-compliance and Certification Support
- Application Development and 3rd Party Apps integration
- Deployment and Post-deployment Support
- Android & iOS Upgrades
- Mechanical Design and ID

Value Additions

- Developed & Enabled a custom Drive-safe UI with OEM App store, Projection Mode (Car Play) and Full Telematics Integration
- Customized Apps for Music, Weather, News, POIs
- Secure & Scalable & Architecture with OEM Managed Firmware OTA

Technology Features

- Freescale i.MX6, Linux, NXP, 802.11 B/G and Blue tooth wireless module, Renesas, Ublox, Quectel/Telit

Smart Reefer Unit for COVID Vaccine Transportation



Business Challenge

- Lack of cold chain infrastructure available in India
- To ensure effective distribution of the COVID vaccine in perfect condition to even the most remote destinations.
- Control & Monitoring of the Vaccine temperature and safely maintained at all stages of delivery

Project Overview

- To design & develop specialized connected reefer truck for the safe transportation of COVID-19 vaccines that ensure the temperature and stability vaccines at all stages of delivery

Solution Highlights

- End to End concept & product development of the connect reefer unit.
- Design & Manufacturing of reefer units with Glass Reinforced Plastic, XPS Foam which is strong, water-resistant, and non-corrosive, light weight and highly insulated.
- IOT Sensor Integration
- Cab Design, Fixtures and Tooling design and In-house Mfg. capability, Product validation support.
- Fleet managers can monitor temperature, humidity, shock, tilt, and tamper.

Value Additions

- QR Code tracking of all stock onboard, so that users can check the location, status, and history of each package.
- Fleet manager can adjust the temperature as required and sound the alarm if a problem occurs
- Container can be assembled locally within in 96 hours





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