



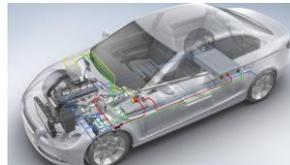
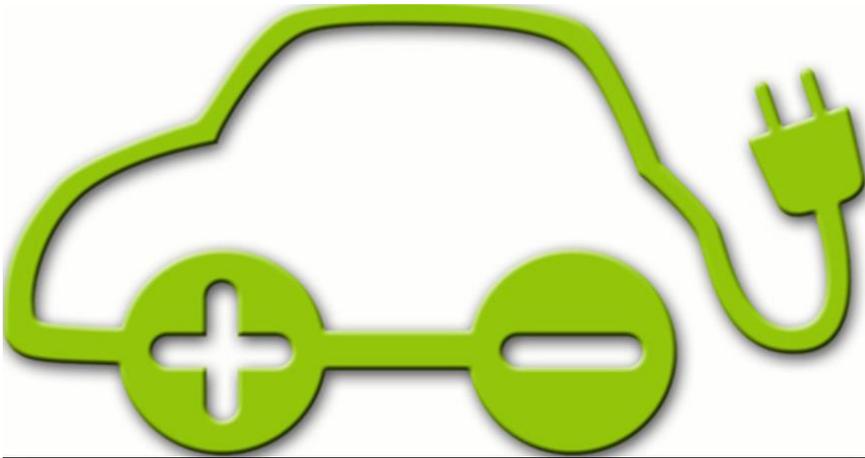
Create, Embed, Empower

Crevavi Technologies

Company profile

About Crevavi Technologies

- Estd in 2011. Based in India. Offices in Bangalore and Mysore
- Branches in US, Germany and Australia
- Team having 200 years of industry experience
- Deep domain and system know-how of Automotive: Combustion, Hybrid and Electric Powertrain



- End-to-end SW architecting for AUTOSAR projects
- Systems consultancy for GearTrains, Internal combustion and electric powertrains, Instrument cluster and Immobilizer ECUs
- Indepth knowhow of MCAL, ComplexDrivers, OS and other AUTOSAR BSW stack configuration
- Strategic R&D partners for global automotive Tier1s (Fortune 500 companies)

Automotive Core competencies



IC Engine ECU
Fuel Injection
Fuel Ignition
Engine Position
Angle/Time Driver
High-pressure pump control

Inverter for e-motor

DCDC converter

Super-capacitor control and diagnosis

Drive Train ECU
Instrument cluster

Bootloaders

OEM specific flashloaders

Immobilizer

Secure boot

Secure programming

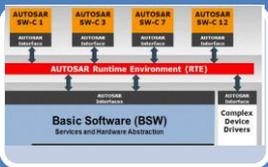
UDS based flash programming

AUTOSAR Competencies



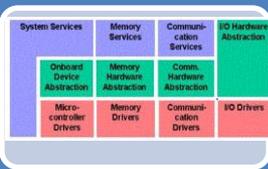
Application Software

- Software Component (SWC)
- Ports definition and configuration
- Runnables definition



Runtime Environment

- Interface configuration between ASW and BSW
- OS configuration: Tasks, interrupts, Events
- Runnables configuration



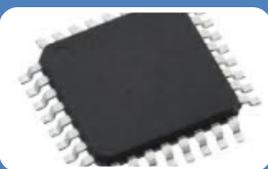
Basic Software

- Services
- Operating system
- Communication, Memory, Diagnostics stack
- Bootloader and flash loaders



MCAL Software and Complex Drivers

- IO drivers
- Linkers, Compiler configuration
- Memory layout configuration
- Complex timing waveform generation and signal acquisition



Microcontrollers experience



Core AUTOSAR services

ECU system level analysis and Requirements Engineering

SW architecting for ECUs

AUTOSAR stack configuration

Optimization and fine tuning for performance and time critical applications

Migration of legacy SW to AUTOSAR

Manual coding of complex Drivers and device drivers

Hybrid implementation : Cohesion of legacy architecture with select AUTOSAR layers

Flashloaders and bootloaders based on UDS ISO14229 standards a

Functional safety (ISO26262) analysis and implementation

Security algorithms, Secure boot and Secure programming

Automotive Engineering Services



- World-wide presence: US, Germany, India and Australia
- End-to-end Systems and domain knowhow consultancy for E-Mobility solutions
- R&D partner for AUTOSAR Basic SW consultancy for Top Tier1s in Germany and USA
 - DCDC and Super-Capacitor ECUs
 - ECU software development and configuration for GearTrain, Internal Combustion, hybrid, electric Powertrain applications, Immobilizers, Instrument clusters and Chassis systems
 - Generic, Scalable, portable and Modular ECU SW platforms in
 - UDS based Immobilizer systems
 - Flashloaders, bootloaders
 - MCAL and Complex drivers
 - CAN, FLEXRAY based diagnostics implementation

Why choose us?

- Team experienced in different industry domains
 - Automotive, Mobile, Aerospace, Energy, IoT/M2M, Robotics
- System and Domain consultancy
- Leverage on 200 years of teams experience
- Adherence to stringent industry standards
- Design-for-Manufacturability know-how
- In-depth competency in delivering high value projects from concept to series production
- Experience in working with global clients



Success Stories

DCDC and SCAP ECU : AUTOSAR SW implementation

Project: Implement and configure AUTOSAR SW stack for DCDC and SCAP ECU for Active Antiroll system

- Configure entire Vector AUTOSAR BSW stack
- Configuration and integration of
 - o OS
 - o BSW
 - o MCAL
 - o RTE
 - o Diagnosis
 - o Complex Drivers
 - Super capacitor cell balancing using SoC
 - Bidirectional DCDC current control using SoC
 - Fault detection and hazard management using SoC
- Functional validation
- End to End system testing for series production

Benefits to target customers

- End-to-End System competency for E-Mobility solutions
- Entire ECU SW architecting as a consultancy
- Power electronics knowhow for Inverters, DCDC, Battery management systems
- Strategies to meet demanding TTM targets



Powertrain ECU software

10 years of automotive powertrain ECU software development

- Application software, Device Drivers development for MPC55XX and TC17XX controllers
- TPU and PCP co-processor programming for time and performance critical applications like Injection and Ignition
- CAN, KWP, LIN communication protocols development
- Implementation and testing of UDS diagnostics services over CAN
- End power-stage control and diagnosis for Injectors, Ignition coils
- Layered SW architecture development on the lines of AUTOSAR standards

Capability and Tools

- MISRA compliant software development
- NI LabVIEW, Vector Canoe and Lauterbach tools' experience

Quality process\methodology

- V-cycle based software life-cycle development
- FMEA, DRBFM (Design Review based on failure modes)
- 8D analysis for field errors and 5xWhy based root-cause analysis
- ISO26262 compliant SW development



Flash-loaders for Aurix TC2XX controllers

Project: Develop Generic and OEM specific flash-loaders

- Define and install platform SW build environment for AURIX controllers
- MCAL & CAN stack integration for AURIX family
- AUTOSAR configuration of MCAL and CAN Transport Layer
- Develop generic and OEM specific flash-loaders
- Support Native and ODX flash specifications
- Develop OEM specific UDS services
- Generic, scalable and modular SW for gear-train applications
- MISRA compliant C code
- ISO14229, ISO15765,ISO_22900 and ASAM MCD-3D compliance

Benefits to target customers:

- Jumpstart development with ready to use AUTOSAR complaint AURIX platform
- Modular, portable, and generic platform for different automotive applications needing AURIX controllers
- Leverage on more than 100 years of teams combined expertise in Embedded Systems



Flash-loader and Immobilizer SW for KTM

Project: Develop Flash-loader and Immobilizer SW

- Develop diagnostics and flashing services of UDS conforming to ISO 14229
- Develop CAN transport layer conforming to ISO 15765
- Renesas RL78 based CAN driver, Flash-loader and other IO drivers
- Key authentication with NXP transponder
- Key Pairing with individual Immobilizer HW
- State of the art encryption and decryption Algorithms defined by Escript
 - Algorithms proven to be unbreakable for next 10 years
- MISRA compliant C code
- Expertise in tool chains (Canoe, vFlash, CAN DiVA, CAPL scripts)
- Product in series production in European market

Benefits to target customers: OEMs

- Scalable, Configurable UDS SW stack for 2-wheeler, 4-wheelers & Commercial vehicles
- Rugged, field proven SW tested with Industry standard 3rd party tools like Vector (ISO 14229, 15767 compliance)
- Modular, portable, and generic immobilizer SW platform to meet any OEM needs



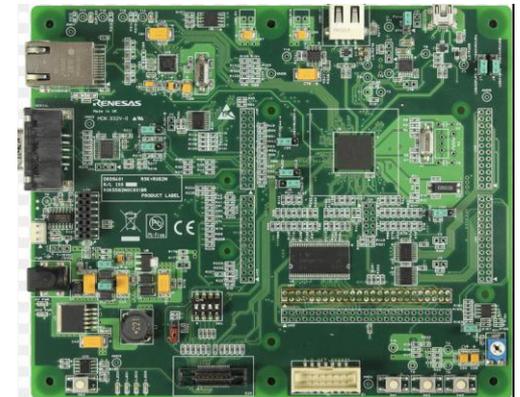
Develop MCAL IO drivers for Renesas family

Project: Develop IO drivers for Renesas RH850 controller

- Develop AUTOSAR like ADC, PWM, I2C, RTC, WDT, SOUND, DMA drivers
- Scalable, generic, modular and robust design
- Compliance to SW layered architecture of AUTOSAR
- Portable across Renesas RH850 family
- MISRA compliant C code
- For Instrument cluster project
 - Concept to series production in 5 months

Benefits to target customers:

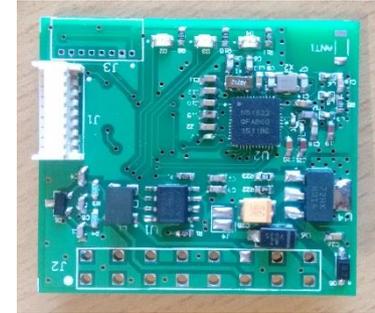
- RH850 controller know-how to meet demanding TTM targets
- Instrument cluster domain know to scale to any OEM requirement
- Modular, portable, and generic IO platform for all Automotive applications
- R&D partner for Tier1s, OEMs
- Indepth system and domain competency



Automotive

Project: Blue-Port

- CAN to Bluetooth adapter for OBD II diagnostics
- Android application
- Scalable HW and SW to support client specific configurations
- Compact and sleek form-factor



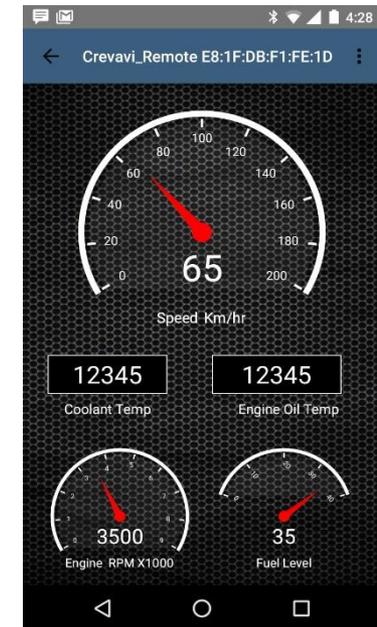
Project: UDS-Immobilizer

- Immobilizer ECU SW (UDS stack, transport layer, CAN stack and Flash loader)
- UDS ISO 14229 and CANTP 15765 SW IP owned by Crevavi
- Pairing with ECU software
- UDS configuration PC based tool
- MISRA compliant C code



Benefits to target customers: OEMs

- Portable, configurable design compatible with various Automotive manufacturers
- Custom UDS ISO 14229 and CANTP 15765 SW IP owned by Crevavi
- State of the art product at economic cost, low form factor
- Modular & flexible to add/modify features with minimum TTM



Water-in-Fuel Sensor HW development

Customer

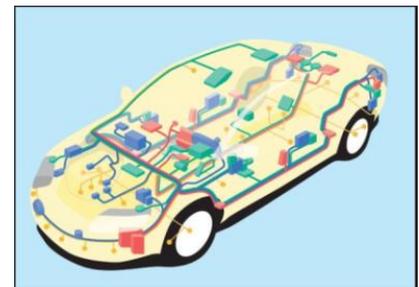
- Sogefi-MNR – an Indian-Italian collaboration
- For leading European and American Automotive Company
- Product in series production

Overview

- Hardware development for Automotive sensor for Water in Fuel (WIF)
- Product development, sourcing and supply

Benefits to target customer

- Aggressive TTM meeting required Automotive Standards



Core Team profile: Sachin Shivapur



19 years of experience in Product development, Services and program management

- Domain expertise
 - Automotive : 15 years in IO device drivers, complex drivers and other AUTOSAR BSW for Engine Management Systems, DriveTrain, Instrument Cluster and Chassis systems
 - Customer Interfacing for several R&D projects from chip tapeout to series production
 - Implementation of complex drivers like Fuel Injection, Ignition, Knock detection, High pressure pump control for global automotive OEMs
 - Security algorithms for flashloaders and immobilizers
 - DRBFM, FMEA, 8D, ISO26262 and Agile process implementation
 - Image signal algorithm post processing, Neon SIMD, OpenCL
- LTE Cellular Modem: 4 years
 - Program management of globally distributed team for Apple i7 LTE modem as part of Intel
 - Driven cross-functional teams to implement complex functionalities and for resolution of field issues
 - Driven performance optimization and power management task forces
 - Supported worldwide validation teams to reach MTBF, Operator tests and project KPIs
- Quality processes: ISO26262, DRBFM, Agile
- Programming : C, assembly, coprocessor microcode
- OS: ThreadX, OSEK

Thank You for your time

Sachin Shivapur

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