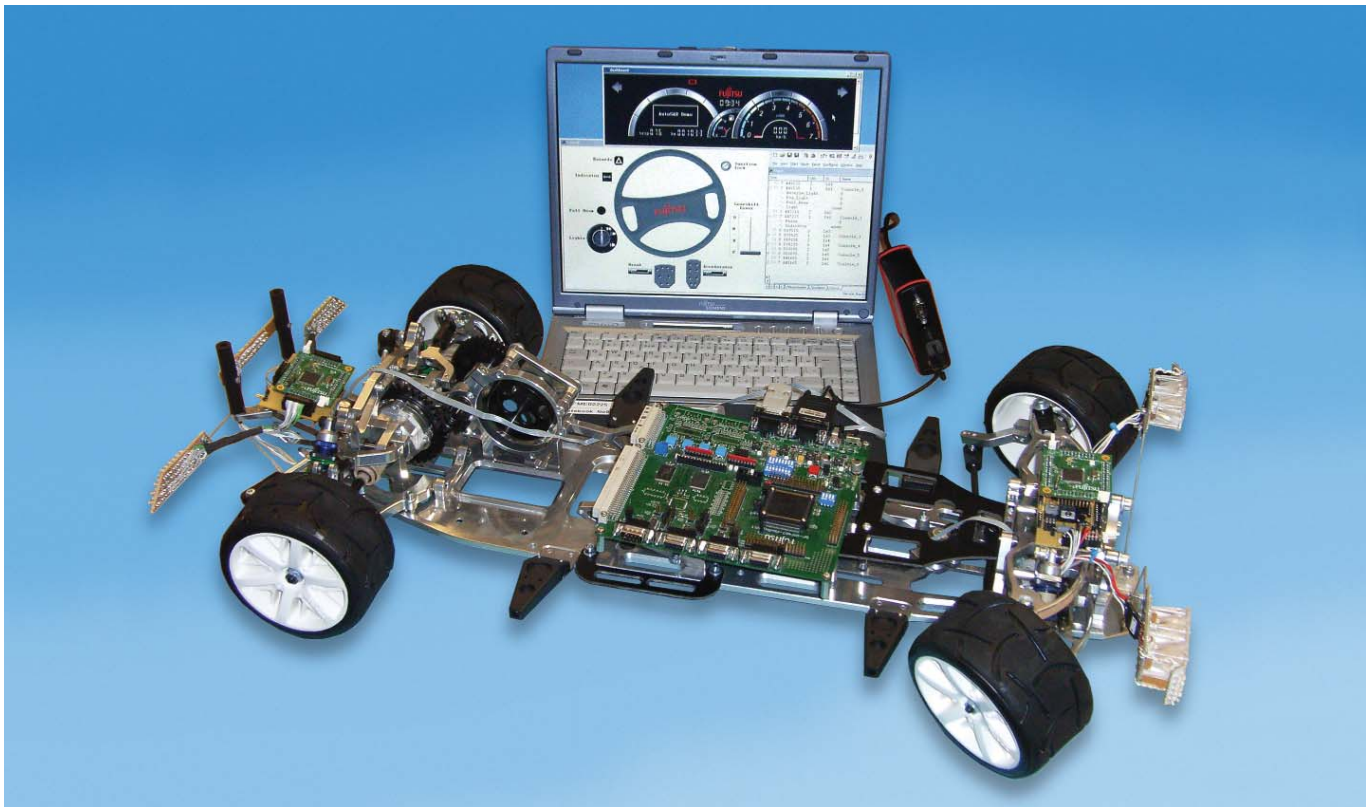
FACTSHEET
AUTOSAR ROADSTER DEMONSTRATOR

FUJITSU

THE POSSIBILITIES ARE INFINITE

AUTOSAR ROADSTER state-of-the-art automotive software on Fujitsu's 32-bit FR MCU



AUTOSAR Roadster featuring Fujitsu's 32-bit microcontrollers series MB91460 operated by application and basic software modules compliant to AUTOSAR 2.0.

Description

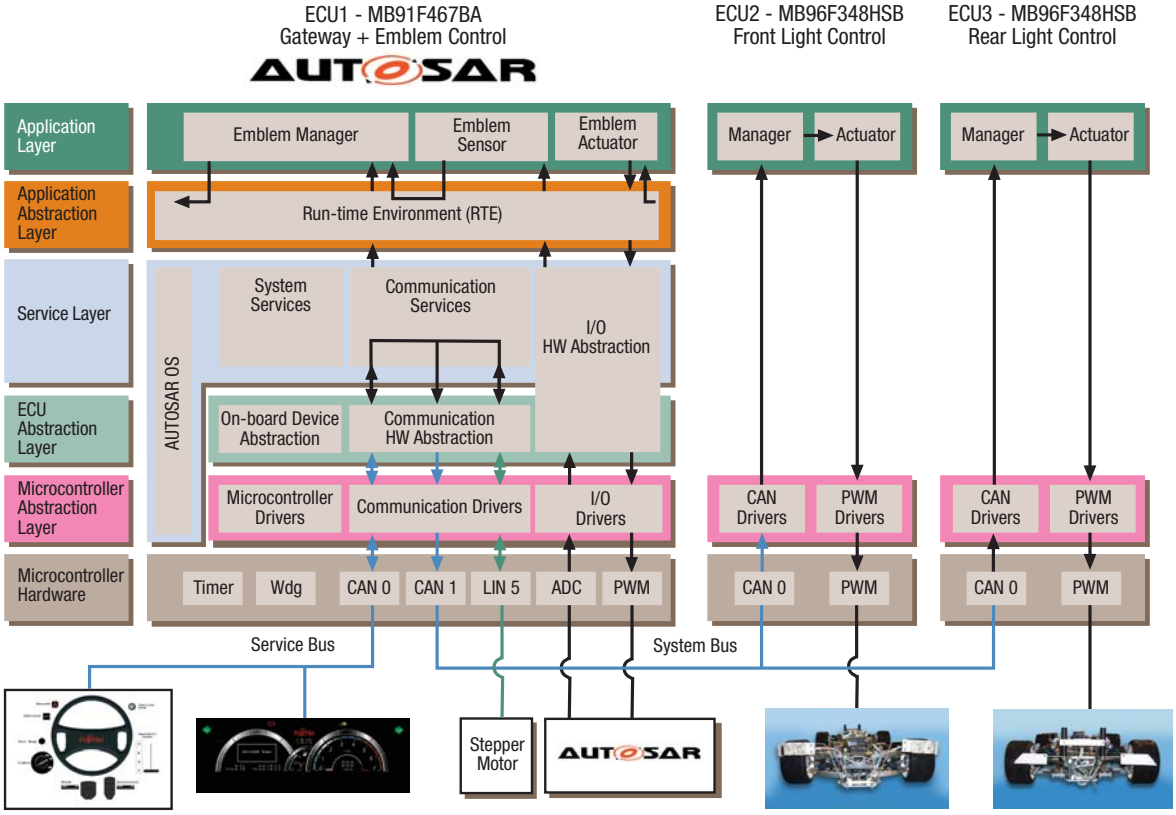
The AUTOSAR® Roadster is a demonstrator that proves Fujitsu's capability as a system supplier for automotive MCUs and state-of-the-art software – the AUTOSAR package.

This version of the AUTOSAR Roadster consists of three ECUs, a front and a back light controller unit and an emblem controller unit that runs with AUTOSAR components compliant to revision 2.0. The emblem controller is operated by an MB91F467BA, which also acts as a gateway, while the light controller units feature an MB96F348HSB, a 16-bit MCU based on the 16FX core. All application software on the emblem control unit runs on top of the run-time environment (RTE) and the AUTOSAR basic software modules (BSW). The AUTOSAR Roadster is controlled via a graphical user interface (GUI) by sending CAN messages. The status of the demonstrator can be monitored from a virtual dashboard.

Features

- Emblem controller unit
  - Gateway functionallity (PDU Router)
  - Control the brightness of the AUTOSAR emblem
  - Control of a LIN stepper motor
- Front light controller unit
  - Control via CAN messages
  - Control of indicators and front lights
- Back light controller unit
  - Control via CAN messages
  - Control of indicators and back lights
  - Adaptive brake lights
- Graphical user interface
  - Virtual dashboard
  - Virtual control via CAN

AUTOSAR



Software Architecture.

Software Architecture

- Emblem Controller Unit (MB91F467BA)
  - The application contains three AUTOSAR Software Components: EmblemManager, EmblemSensor, EmblemActuator and an IO-Hardware abstraction. This abstraction encapsulates the functionality of setting a PWM duty cycle and retrieving the value of an analogue port. Depending on the value at the analogue port, a PWM duty cycle is set. The PWM output is connected to the AUTOSAR emblem, thereby controlling the brightness of the emblem. This functionality can be enabled and disabled via a CAN message from the graphical user interface. ECU1 can also perform the same function. The functionality of a CAN/LIN gateway is implemented in the PDU router within the service layer.

- Light Controller Units (MB96F348HSB)
  - Both applications contain two functions: the Manager and the Actuator. The Manager receives CAN messages via the CAN driver and forwards them to the Actuator. By utilising the PWMs the Actuator takes control of the brightness of the lights

AUTOSAR Modules in use on the Roadster (extract)

RTE	(Run-time Environment)
ComM	(Communication Manager)
PduR	(Protocol Data Unit Router)
EcuC	(ECU Configuration)
EcuM	(ECU State Manager)
SchM	(Basic Software Scheduler)
Dem	(Diagnostic Event Manager)
CanIf	(CAN Interface)
LinIf	(LIN Interface)
Can	(CAN Driver)
Lin	(LIN Driver)
Port	(Port Driver)
Dio	(Digital I/O Driver)
Mcu	(Microcontroller Unit)
Gpt	(General Purpose Timer)
PWM	(Pulse Width Modulation Driver)
ADC	(A/D Converter Driver)
WDG	(Watchdog Driver)

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