CETITEC

AVB AND TSN
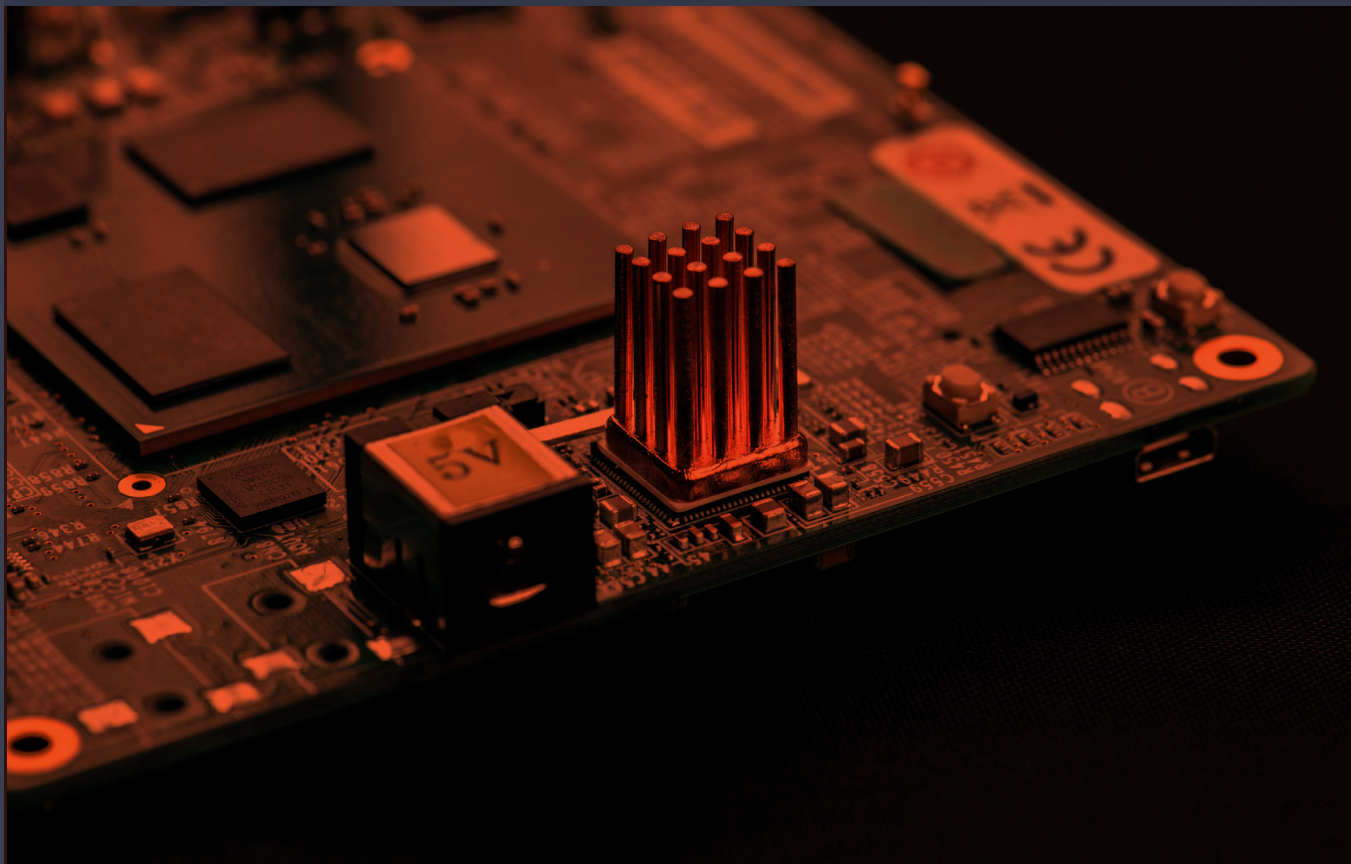# SOLUTION

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AVB AND TSN SOLUTION

STATE-OF-THE ART SYSTEMS

Automotive systems and devices must meet ever-increasing demands for performance, reliability and safety. To keep up with these requirements, developers need a comprehensive solution that can handle the complexity of modern automotive architectures. Our AVB and TSN Solution combined with EveryIP Framework provide just such an answer – a complete suite of technologies to help create state-of-the art automotive systems. All components are available off the shelf for mass production purposes making CETITEC solutions ideal for any project or application.

ARCHITECTURE

An overview of the CETITEC AVB infotainment solution, including audio and video streaming and control, is shown in the block diagram below. The streaming software components implement audio and video streaming according to IEEE1722 or IEEE1733, time synchronisation according to IEEE 802.1AS and stream reservation according to IEEE 802.1Qat, if required. Audio and video content delivered by AVB mechanisms is presented to application programmers via standard APIs such as ALSA and V4L2, allowing seamless integration with popular media player applications (web browsers, GStreamer, PulseAudio, MPlayer). The control software components provide Diagnosis over IP (DoIP), Remote Procedure Call and Service Discovery functionality according to the SomeIP specification. The EveryIP framework provides all remote procedure call and payload encoding/decoding functionality, as well as service propagation and discovery, and the Integra code generator generates the stub code as the basis for implementing the business logic.

KEY FEATURES

- IEEE 802.1AS, 802.1Qav, IEEE 802.1Qat, IEEE 802.1ba, IEEE 1722/1733
- Flexible and functional interface for integration into automotive applications
- Independent from operating systems
- Maximizes the advantages of built-in AVB specific hardware
- Software implementations possible for cases where no hardware support is available

CETITEC AVB Infotainment Solutions

Legend
- Customer Software
- CETITEC Products
- 3rd Party
- Hardware
- HW Component
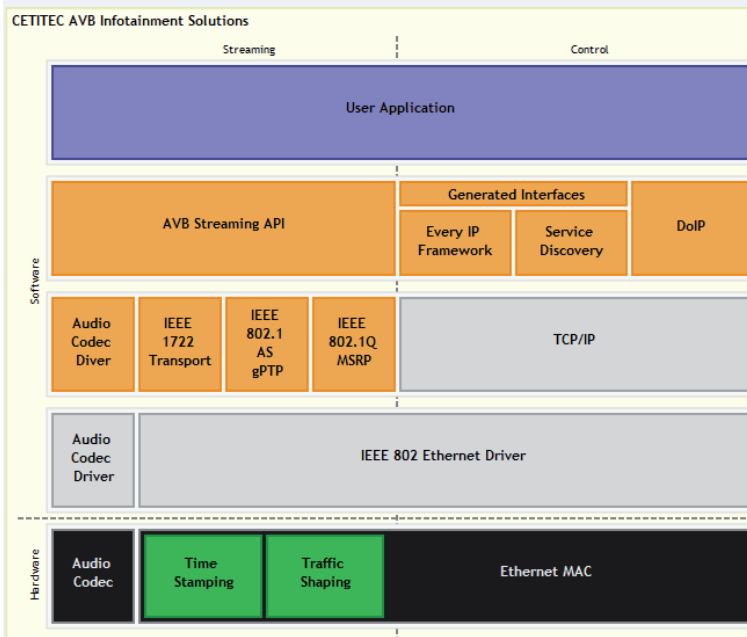
NEXT STEPS

Request for Quotation: sales@cetitec.com
Further Information: +49 (7231) 95688-62

AVB AND TSN SOLUTION

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REFERENCE INFOTAINMENT SYSTEM

CETITEC's AVB Reference Infotainment System consists of the following devices:

- Renesas R-Car H2 board with Linux, which is used as an automotive headunit and acts as an audio talker and video listener.

- Renesas R-Car E2, which acts as a video talker and streams locally stored video content

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- Renesas R-Car E2 and Texas-Instruments J5eco evaluation boards acting as audio listeners, each equipped with a pair of active speakers

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- AVB switch

- CETITEC Automotive Bus Converter acting as a gateway between CAN and the protocol used on Ethernet (RPC based on SomeIP) to connect automotive human interface devices ("iDrive") to the head unit.

FEATURES

The R-Car H2 board runs an HMI applic tion that renders video streams received via AVB and sent from the R-Car E2.

A lip-sync test is included in the reference system to demonstrate lip-sync between audio and video distributed over different signal paths using AVB.

Efficiency is a key issue in automotive applications, which is why the Class A audio streaming implemented by Cetitec consumes less than 1% of the CPU power.

CETITEC AVB Reference Infotainment System

CETITEC AVB Setup

Display

HDMI

Renesas
R-Car E2
Video Talker

Renesas
R-Car H2
EvaBoard
Video Listener
Audio Talker

AVB

AVB

Renesas
R-Car E2
Audio
Listener

AVB

AVB

AVB
Switch

TI J5ECO
Audio Listener

Audio

AVB

Audio

CAN/Ethernet
Gateway
(ABC)

CAN

Left
Speakers

Human Interface Device

Right
Speakers

AVB AND TSN SOLUTION