MOST Technology Report

MOST Connectivity Worldwide

We are delighted to present an overview of MOST Technology and introduce the latest accomplishments of the MOST Cooperation. MOST offers a network architecture for HD audio/video and IP-based applications: MOST provides a powerful, flexible, and upgradable network architecture that forms a stable, robust backbone to easily and seamlessly integrate many applications. The MOST network concept is inherently scalable and extendable with respect to speed and types of data channels. The MOST Cooperation celebrates the growing acceptance of this automotive network standard by key carmakers worldwide. Over 200 car models worldwide have implemented MOST. MOST connects to other industry standards such as Universal Plug and Play (UPnP) communication based on the Internet Protocol (IP) and AUTOSAR. In fact, MOST is so widely used now, that the MOST Cooperation is considering how to transfer the MOST Specifications to the International Standards Organization (ISO), to make them more accessible and make future technical developments go through a recognized standards development organization.

MOST Technology is versatile and easy-to-use: Tier-1s and carmakers demand future automotive networks to be as simple as possible. MOST provides a mature, reliable and cost-efficient network technology. It is versatile, enabling suppliers and carmakers to achieve a short time to market. MOST is available in three speed grades with 25, 50 and 150 Mbit/s. The portfolio of physical layers includes Plastic Optical Fiber (POF/LED), Shielded (STP) and Unshielded Twisted Pair (UTP) copper wires, and coaxial cables.

MOST architecture is scalable and extendable: to meet the future automotive network requirements for a powerful and ascendable multiplex architecture with free topology configuration, MOST provides the expandable multi-protocol approach, with different types of data being transported across the different MOST channel types. In addition, the mechanism is flexible and expandable with extra channels for future protocols. Many different topologies are feasible: from star to daisy-chain to tree, different topologies and combinations can be connected to each other.

Within a MOST network, a remote control feature can reduce the number of microcontrollers and the amount of memory required in peripheral nodes such as displays, cameras, and amplifiers, thus driving system cost down significantly.

The MOST network is deterministic and predictable: the growing number of data streams between devices and the higher safety requirements represent a challenge for planning and verifying a networked system. MOST networks are engineered networks where the complete planning of bandwidth and connectivity are defined at design time. Planned bandwidth is guaranteed and reproducible at any time. No extensive runtime examinations or simulations are necessary. In addition, control data with real-time demand has its own channel, ensuring reliable bandwidth and a well-defined channel behavior - independent and unaffected by streaming data and peak loads in the other channels. MOST also provides an Ethernet packet channel that uses unmodified Ethernet frames for Internet and IP-based applications.

Yours sincerely,

The MOST Cooperation
Steering Committee

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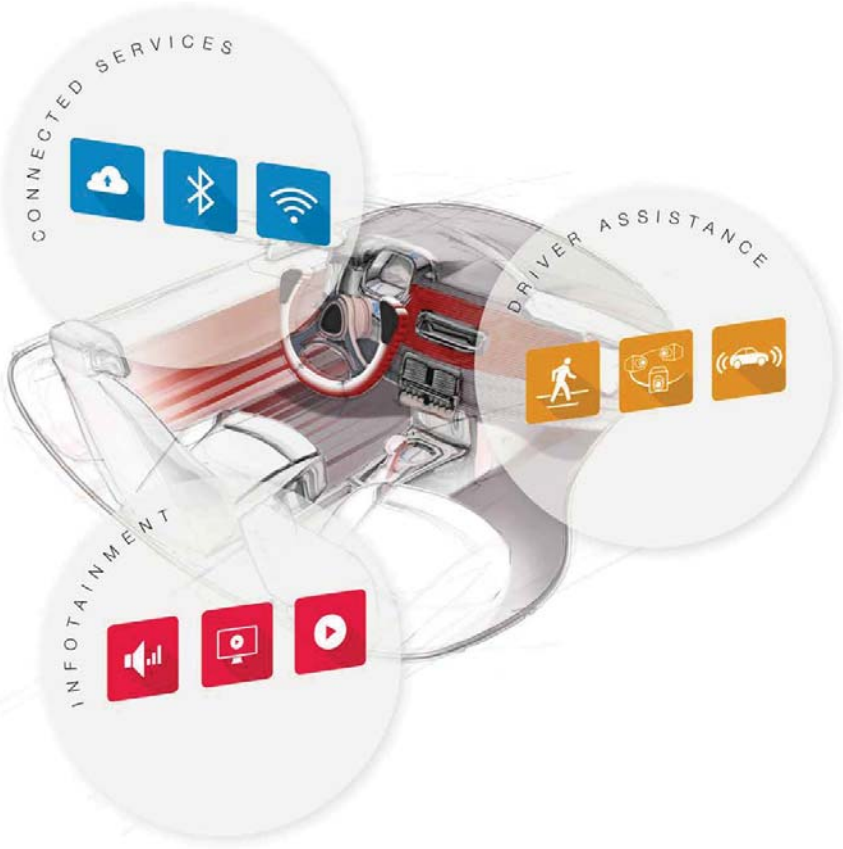


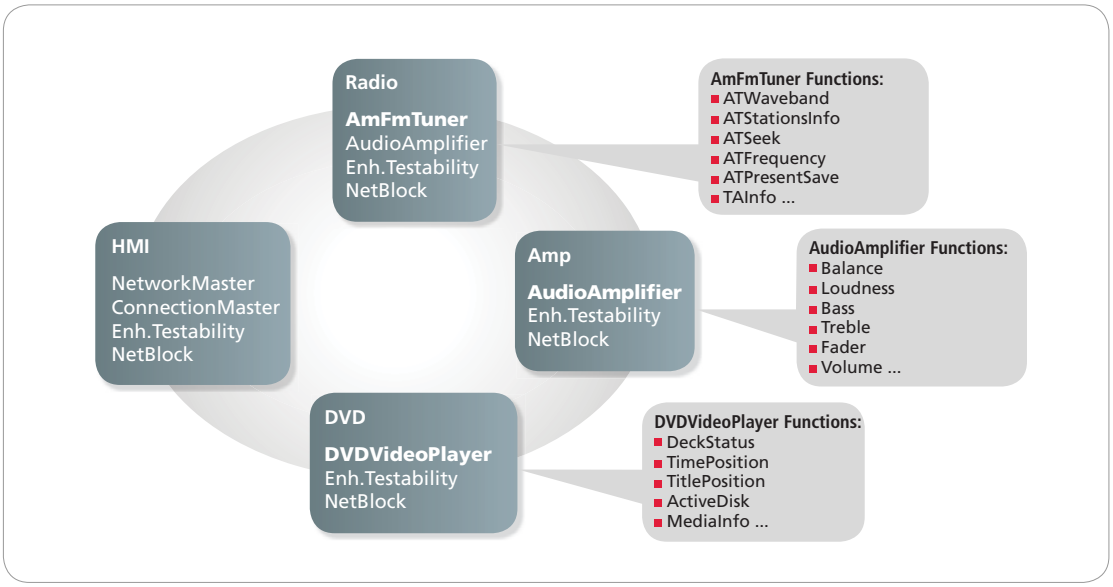
Network Intelligence: Real Interconnectivity

MOST – Media Oriented Systems Transport – is a multimedia network of 25, 50 and 150 Mbit/s bandwidth, optimized for multimedia and infotainment applications. It is a network originally developed by and for the automotive industry. The technology was designed from the ground up to provide an efficient and cost-effective network to transport audio, video, data and control information between any devices attached, even in the harsh environment of an automobile. Founded in 1998, the MOST Cooperation is the organization that standardizes and refines MOST Technology.

MOST is a synchronous network: a timing master supplies the clock with a synchronous and continuous data signal and all other devices synchronize their operation to this base signal. This technology eliminates the need for buffering and sample rate conversion, so that very simple and inexpensive devices can be connected, and the hardware of the network interface itself is lean and cost effective. Within the synchronous base data signal, multiple streaming data channels, asynchronous channels, and a control channel are transported. The control channel regulates which streaming data channels the sender and receiver use. Once the connection is established, data can flow continuously and no further addressing or processing of packet label information is required. The bandwidth of the streaming data channels is always available and reserved for the dedicated stream so there are no interruptions, collisions, or slow-downs in the transport of the data stream. This is the optimum mechanism for delivering streaming data like audio and video.

MOST meets the automotive requirements not only for the traditional areas of entertainment and information, but also for the new domains of mobile connectivity, connected services, and driver assistance. In addition to transporting high Quality of Service (QoS) audio and video, it also provides an automotive-ready physical layer to transport Ethernet frames and protocols within the car. The flexibility of MOST network technology allows star, daisy-chain, tree, and other topologies implemented on different physical layers: Plastic Optical Fiber (POF/LED), Shielded (STP) and Unshielded Twisted Pair (UTP) copper wires and coax cables. MOST defines the physical interconnection between devices and also specifies and standardizes a lean embedded communication protocol and software framework that simplifies the development of complete systems and applications to distribute and manage multimedia content.

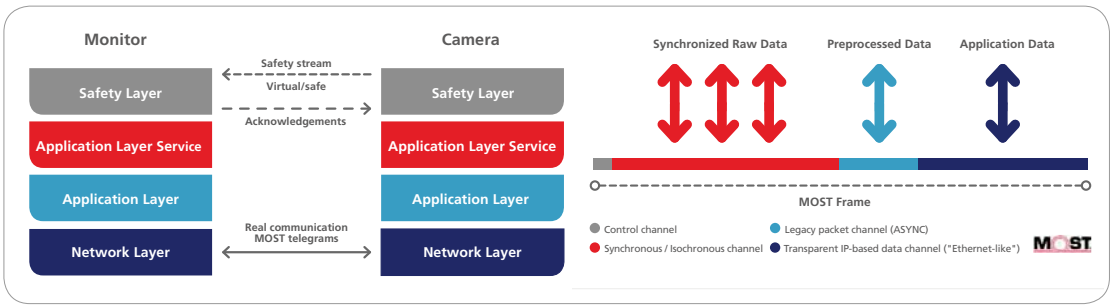
Framework: Flexible and Scalable



The MOST Framework with its function block concept comprises a clear application programming interface, which allows simple access to the applications. It is able to standardize interfaces between both infotainment applications and applications of other domains such as sensor and camera interfaces. Due to the functional system model, it does not matter whether the communication partner sits in the same control unit or is connected across the network.

The MOST Framework has been designed for optimal synchronous and isochronous streaming with almost no overhead for administrative communication control. It represents a functional and hierarchical system model appropriate for controlling powerful, distributed systems. Furthermore, the framework is object oriented, lean, and suitable for embedded systems. It provides a network-independent functional system with seamless scalability and easy maintenance. In addition, the framework supports all kinds of HMIs and allows free partitioning of the functionality to real devices. Service discovery and notification are available. The application programming interface (API) is standardized through the function block framework. The architecture provides a flexibly scalable, automotive-ready Ethernet channel according to IEEE 802.3. Thus, it guarantees simple integration with IP-based protocols such as Universal Plug-and-Play (UPnP).

MOST150 Technology has already been investigated with respect to safety requirements by corresponding studies in cooperation with the German TÜV. With help of a safety layer concept on top of the application layer, MOST150 enables failsafe applications up to SIL level 3 according to IEC 61508 and ASIL D according to ISO 26262. Moreover, the network can even be mixed up with “normal” network nodes without a safety layer.



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