

MOST Informative



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In the year of its Tenth Anniversary the MOST Cooperation goes on a world tour exhibiting at the MOST Forum, the SAE Convergence and Car Electronics Show Japan. In November the MOST Cooperation will host the MOST Interconnectivity Conference Asia.

MOST Technology 7

The MOST Cooperation has created and released MOST Specification Rev. 3.0 providing the specification for audio and video signals to be transported with high bandwidth efficiency. FZI research institute has developed a novel virtual prototyping approach for verification of distributed embedded systems in early design phases in order to decrease complexity and costs.

MOST News 11

Recent News of member companies as Avago Technologies, Dension, Firecomms, Fujitsu, Melexis, NAV-TV, Ruetz System Solutions, SMSC, ST Microelectronics, Telemotive, Tyco Electronics, Vector, and Ventura Technology contributing to and using MOST Technology.

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The MOST Cooperation is delighted to welcome new member companies. MOST Technology is now implemented as part of the infotainment systems in over 60 car models.

MOST Outlook 20

Upcoming MOST conferences and trade shows worldwide with the MOST Cooperation presenting highlights and achievements.



Dear Readers,



As the MOST Cooperation celebrates its Tenth Anniversary, it has embarked on a world tour to present the first solutions and products based on the recently released MOST Specification Rev. 3.0. While the specification is independent of speed grade, it is designed to work with the newly defined MOST150 physical layer. Thus, it enables the use of higher

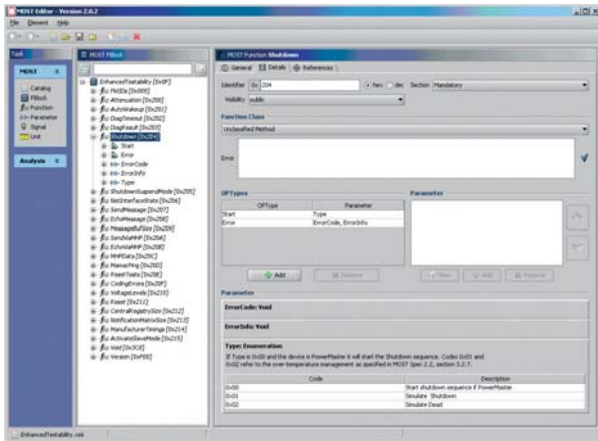
bandwidth at 150 Mbps, an isochronous transport mechanism to support extensive video applications, as well as an Ethernet channel for the efficient transport of IP-based packet data. For the first time MOST provides an automotive-ready physical layer for Ethernet in the car. In this edition of MOST Informative member companies introduce their first products and services based on the new specification.

The MOST world tour is starting off in Germany: You are all invited to attend the first International MOST Forum on September 30 in Stuttgart. The MOST Cooperation supports the conference with technology expertise and we will also present MOST demos at the accompanying exhibition. Some brand new car models with MOST inside will

be shown. Only a few weeks later, the MOST tour will continue to the US and exhibit MOST50 and MOST150 solutions at the SAE Convergence show, October 20 to 22 in Detroit. In November the MOST world tour travels to South Korea for the ninth MOST Interconnectivity Conference Asia which will be followed by a MOST booth at the 1st International Automotive Electronics Technology Expo (CAR-ELE JAPAN) in Tokyo, Japan, in January 2009. By March 2009 we will be back in Germany for the Annual All Members Meeting in Frankfurt.

Dr. Christian Thiel
Administrator of the MOST Cooperation

Launch of Totally Revised XML Editor



The MOST Cooperation Working Group FCAT Exchange Format has launched a totally revised XML Database Editor based on an original ver-

sion provided by the ASAM consortium (www.asam.net). Due to this new editor a rather seamless transition between both formats will be possible. The first step in the

migration was taken in December 2007. MOST Editor Rev. 2.0.2 was published in the intranet for members' use. It supports Document Type Description DTD Rev. 6.05.1. The next step will be an update to MOST Specification Rev. 3.0, and by the end of 2008 the FIBEX 3.0 format will be supported. The Working Group also created an FCAT example xml that is based on the new Editor and the revised DTD Cookbook Rev. 1.1. This example walks through to all MOST Function classes and data types.

The FIBEX (Fieldbus Exchange) format has been specified in cooperation with

www.mostcooperation.com

10th Annual Member Meeting of the MOST Cooperation Held in Frankfurt

Cooperation Celebrated 10 Years of Successful MOST Design and Development

The members of the MOST Cooperation came together in Frankfurt (Germany) on March 11th, 2008, to hold their tenth annual All Members Meeting. The international members of the organization include the 16 leading carmakers and over 75 of their premier suppliers. "We are proud to celebrate our tenth anniversary that marks an outstanding automotive success story", stated Dr. Christian Thiel, Administrator of the MOST Cooperation. "Within only 10 years MOST has been accepted as the de-facto standard for multimedia and infotainment networking in the automotive industry. It is now implemented in over 60 different car models worldwide, including the first Asian models from Hyundai/Kia, SsangYong and Toyota. Today, within a decade after the first sketch of the MOST ring structure, the third generation of the infotainment backbone is already defined. At 150 Mbps, it is 6 times faster than the original 25 Mbps data rate and is adapted to the bandwidth requirements of various carmakers."



On the eve of the Meeting the MOST Cooperation started off with an international press conference introducing the latest technology achievements to the representatives of automotive trade media. The presentation was succeeded by a discussion session taking place in the exhibition area and including demonstrations of member companies. The evening concluded with a get-together of the MOST society exchanging latest experiences and discussing future trends.

During the All Members Meeting the MOST Cooperation's Steering Committee presented a report of the current status of the technology followed by an outlook and roadmap for 2008. Individual members then reported on the challenges and success stories involved in making MOST systems a reality. A variety of car manufacturers and automotive suppliers also showcased their latest products and designs during the accompanying exhibition.

www.mostcooperation.com



Automotive Electronics Industry and Academia Meet on 30th September 2008 for the International MOST Conference and Exhibition in Stuttgart

MOST Cooperation Supports and Exhibits at MOST Forum 2008

The MOST Forum 2008 presents an interesting and innovative conference program on September 30, 2008, in the Liederhalle Cultural and Congress Center in Stuttgart (Germany). This international conference and exhibition will cover a broad field of topics with a wide range information on MOST infotainment technology. During their presentations the speakers will discuss MOST applications, experiences and technologies concerning networking and system architecture, physical layer, compliance and quality aspects, series projects experience, MOST and other standards, as well as MOST in research and development.

“The MOST Forum provides an ideal venue to share ideas and experiences, and to discuss the latest news on this de-facto automotive infotainment standard”, states Prof. Dr. Andreas Grzempa, author of the MOST Book and professor at the University of Applied Sciences Deggendorf. “The objective of the MOST Forum is to bring together top professionals from the automotive electronics industry and academia to exchange information and results of recent work on systems, circuits, technologies, processes and applications.” The conference will provide a forum for a broad audience reaching from researchers, designers, engineers, system developers, to purchasers and journalists,

and to the managers of the industries involved. In the exhibition area various companies will present their MOST solutions and applications. Amongst the exhibitors will be the MOST Cooperation presenting the MOST150 multimedia demo, AUDI AG, Avago Technologies, BMW Group, comlet, Daimler AG, Dension Audio Systems, GADV, K2L, LeCroy, MBtech, Ruetz System Solutions, SMSC, and STEG. The MOST Cooperation is participating in the MOST Forum to help their

member companies further disseminate the knowledge learned in over 10 years of intensive work. The cooperation's target is to provide a high quality conference by encouraging the members to attend the conference and exhibit MOST solutions to share their experiences with MOST Technology.

On the evening of September 29th, 2008, all participants are invited to join for the MOST networking event in Stuttgart. At 19.00 Harald Schöpp, Member of the MOST Cooperation Steering Committee, will inaugurate the MOST

Forum. During the dinner attendees will have the chance to meet influential people from the automotive electronics industry. The media partners Electronics Design Group, Elektronik automotive and ElektronikPraxis, as well as industry partner ZVEI (Electrical and Electronic Manufacturers' Association), are contributing their expertise and technology know-how.

www.mostforum.com

MOST 08 FORUM

International MOST Conference & Exhibition
30TH SEPTEMBER 2008 STUTTGART - GERMANY

Top Professionals from Automotive Electronics
Highlights and Future Technologies
MOST - The Multimedia Network

Knowledge Partner: MOST
Media Partner: electronics design
Industry Partner: praxis automotive
Organization: ZVEI, huggenberg

More information and registration at www.mostforum.com

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Conference Program

8.00	Registration and Reception Coffee <i>Exhibition Opens</i>	
9.00	Opening and Welcoming Speech	
9.15	Networking Vehicle Infotainment Systems with MOST <i>Dr. Alexander Leonhardi, Daimler</i>	Keynote Speech
9.45	MOST150 – The New Infotainment Backbone for Automotive Applications <i>Harald Schöpp, SMSC</i>	MOST Networking and System Architecture
10.15	MOST150 Simulation Framework / Proposal for a MOST150/Ethernet Gateway Implementation <i>Andreas Schramm / Richard Wurm, BMW</i>	
10.45	Coffee Break / Networking / Exhibition	
11.15	H.264 Low-latency Video Compression in Automotive Applications <i>Ralf Schreier, On Demand Microelectronics</i>	
11.45	SoftMLB on the MPC5517 <i>Juergen Frank, Freescale</i>	
12.15	Usage of AUTOSAR Diagnosis Modules in a MOST ECU <i>Paul Hoser, BMW Car IT</i>	MOST and Other Standards
12.45	Lunch / Networking / Exhibition	
14.15	Plastic Optical Fiber Coupling Systems: A Novel Opto-mechanical Modelling Approach <i>Dr. Youri Meuret / Els Moens / Dr. Heidi Ottevaere / Prof. Dr. Hugo Thienpont / Dr. Michael Vervaeke, Brussels University</i> <i>Carl Van Buggenhout / Dr. Piet De Pauw, Melexis</i>	MOST Physical Layer
14.45	nanoStructures™ Technology and Possibilities for the Next Generation of Optical Fibers for Vehicular Applications <i>Dr. Claudio Mazzali, Corning Inc.</i>	
15.15	Automotive Application Recommendation for MOST150 Physical Layer Components <i>Joerg Angstenberger / Dr. Viktor Tiederle, RELNETyX</i> High Quality System Integration <i>Georg Janker / Wolfgang Malek, Ruetz System Solutions</i>	MOST Compliance and Quality
15.45	Coffee Break / Networking / Exhibition	
16.15	Error Handling Strategies for a MOST Application Framework <i>Dr. Alexander Leonhardi / Torsten Pech / Andreas Vallentin, Daimler</i>	MOST Series Projects Experience
16.45	AUDI Q5: Evolution of a MOST System Architecture <i>Uwe Hackl, AUDI AG</i>	MOST Networking and System Architecture
17.15	Conclusion and End of Conference	
18.00	<i>Exhibition Closes</i>	

MOST Cooperation Exhibits at Convergence – Electronics Transportation Conference 2008

The MOST Cooperation will be showing its MOST50 and MOST150 Technology highlights at the SAE Convergence Exhibition from October 20th to 22nd, 2008, in Detroit, Michigan (USA). Please visit us at Booth 913 at this important event of the international automotive and transportation electronics community. MOST is rapidly expanding around the world. In addition to the success of MOST in the European and Asian car markets, American carmakers have started to seriously consider the MOST Technology. The Convergence show takes place every two years and



it is a key automotive electronics event in the US so our effort in exhibiting will be essential to making MOST solutions better known. www.mostcooperation.com

MOST Cooperation to Host 9th MOST Interconnectivity Conference Asia in South Korea



The MOST Cooperation will be hosting the ninth MOST Interconnectivity Conference Asia (formerly Japan Interconnectivity Conference) on November 5th, 2008, at the JW Marriott Hotel in Seoul, South Korea. During the one day convention representatives of the MOST Cooperation will present an update on recent achievements and

the MOST roadmap to Asian carmakers and their suppliers. All interested parties are welcome to join the conference. Media representatives will be invited to a press conference and technology demonstrations.

www.mostcooperation.com/ICA

1st International Automotive Electronics Technology Expo (CAR-ELE JAPAN) in Japan

On January 28th to 30th, 2009 the MOST Cooperation will present latest technology achievements to the Japanese public. At the Tokyo Big Sight this International Automotive Electronics Show takes place for the first time.

www.mostcooperation.com



MOST Specification Rev. 3.0 Released

The MOST Cooperation has created and released MOST Specification Rev. 3.0 for the next generation infotainment backbone. It is a complete overhaul of the specification structure offering several new features. Figure 1 shows the document structure of the MOST framework. While the specification is independent of speed grade, it is designed to work with the newly defined MOST150 physical layer. Thus it provides

- the use of higher bandwidth at 150 Mbps,
- an isochronous transport mechanism to support extensive video applications,
- an Ethernet channel for the efficient transport of IP-based packet data.

MOST Specification Rev. 3.0 provides the specification for audio and video signals to be transported with high bandwidth efficiency and with little overhead for addressing, collision detection/recovery or broadcast. This offers capacity that packet-switched networks can only achieve with much higher gross bandwidth. Consequently multiple high-definition (HD) video streams and multi-channel surround sound with premium quality of service can be transmitted, while simultaneously moving high loads of packet data around.

MOST Specification Rev. 3.0 – The Multi-Channel Network

MOST is a multi-channel network. The new specification adds

- Ethernet
 - isochronous channels
- to the well known channels used for
- synchronous
 - packet
 - control data
- of previous specification versions.

The Ethernet channel can transport unmodified Ethernet frames as specified by IEEE 802.3. This enables software stacks and applications from the consumer and IT domain, where the speed of innovation is much faster, to be seamlessly migrated into the car. TCP/IP stacks or protocols that use TCP/IP can communicate via MOST without modification. Thus, the new generation of MOST

provides an automotive-ready physical layer for Ethernet in the car. MOST Specification Rev. 3.0 supports both conventional 16 bit addressing as well as 48 bit addressing using IEEE MAC addresses.

In addition, MOST Specification Rev. 3.0 offers an isochronous channel to support streams which are not synchronized to the MOST frame rate, e.g. discrete-frame data like SPDIF. A typical use case is the transport of MPEG streams over a MOST network, since MPEG streams generally use variable bit-rates. This new MOST feature enables extensive video applications and quality-of-service (QoS) IP transmission. The connection management for isochronous connections is similar to the one for synchronous connections. It is specified in MOST Specification Rev. 3.0 as well as in the corresponding “System Function Blocks”, e.g. GeneralFBlock template and ConnectionMaster.

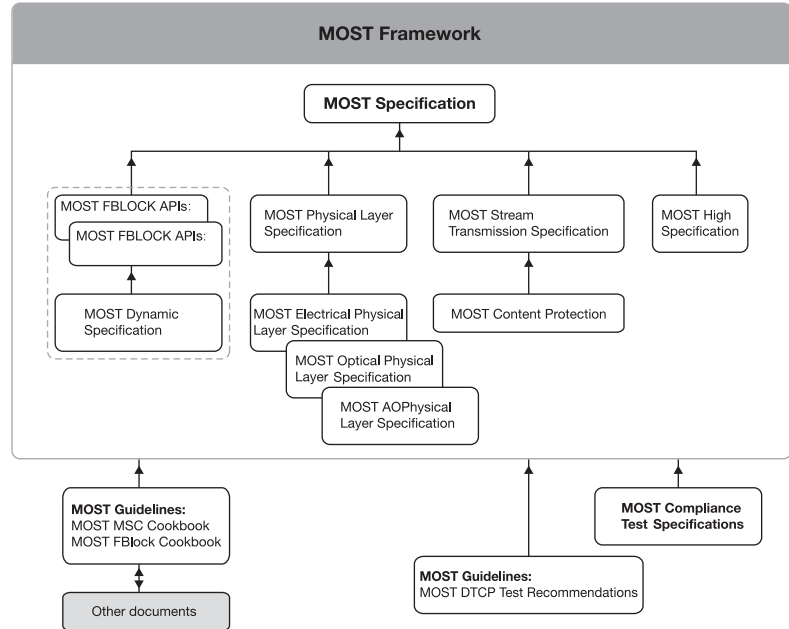


Figure 1: MOST Document Structure

Figure 2 gives an overview of the different MOST data in the multi-channel network. MOST Specification Rev. 3.0 also adds significant enhancements to the control channel (which is used for real-time control of devices) by doubling the bandwidth compared to MOST25. The payload of Control Messages are expanded from 12 bytes to 45 bytes or 44 bytes in case of segmented transfer.

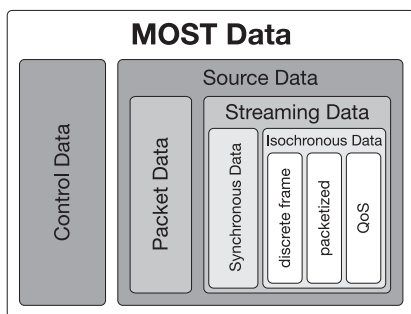


Figure 2: MOST Data in the multi-channel network

Optimized Diagnosability

Diagnosability has been optimized by an overhaul of Ring Break Diagnosis behavior as well as Detection of Sudden Signal-Off and Critical Unlock. Ring Break Diagnosis (RBD) is used to localize serious errors in the network, such as ring break, excessive attenuation — no lock possible, or defective devices. When an error is detected, each device stores its relative ring position and reports it as a diagnosis result. Ring Break Diagnosis (RBD) has 3 phases:

- Phase 1: Activation
An external trigger is applied to the device to start the Ring Break Diagnosis. The trigger event is system specific (e.g., switch-to-power detection or electrical wake-up line).
- Phase 2: Diagnosis
The actual diagnosis takes place during this phase. Each device stores its diagnosis result when this phase is finished.
- Phase 3: Delivery of result
During this optional phase the diagnosis result from phase 2 is delivered to a dedicated application.

During normal operation each device performs a Detection of Sudden Signal Off and Critical Unlock. In the case of a sudden signal-off the detecting device switches to Timing Master mode, sets the Shutdown Flag and stores the cause of the fault (either Sudden Signal Off and Critical Unlock). After the restart of the network, a unique controller may query all nodes for stored faults. The robustness of these procedures has been verified during the early phase of the specification by using Failure Mode and Effects Analysis (FMEA) as well as reference implementations through virtual prototypes. For example, to verify Ring Break Diagnosis behavior the functional and timing behavior

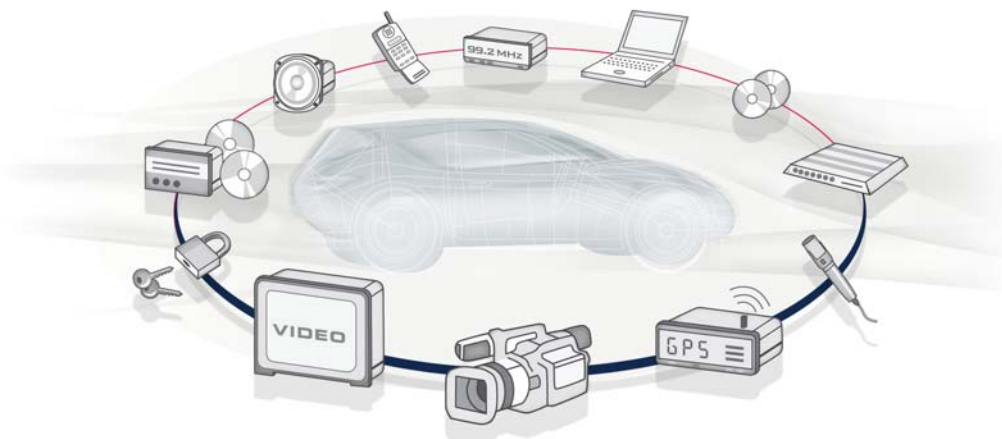
was modeled and executed in over 100,000 test sets that use well-known methods from System-on-Chip (SoC)-Verification. These measures help to simplify risk assessment and increase confidence in the readiness to apply the new technology.

Lessons Learned from Compliance Verification

MOST Specification Rev. 3.0 incorporates several “lessons learned” mainly driven by the experience of MOST Cooperation’s Compliance Verification Program. Emphasis has been put on clear specification points where conformance can be easily verified during compliance testing.

Exchange Format

The overhaul had only small effects on data types and function classes. This allowed the xml function catalog exchange format based on Document Type Description DTD Rev. 6.05.2 to be adapted in a backward compatible way. The DTD Cookbook Rev. 1.1 still applies. The MOST Cooperation XML Editor Rev. 2.1 has been maintained for this format. All prerequisites have been fulfilled so that in the future the ASAM FIBEX format can be used, too.



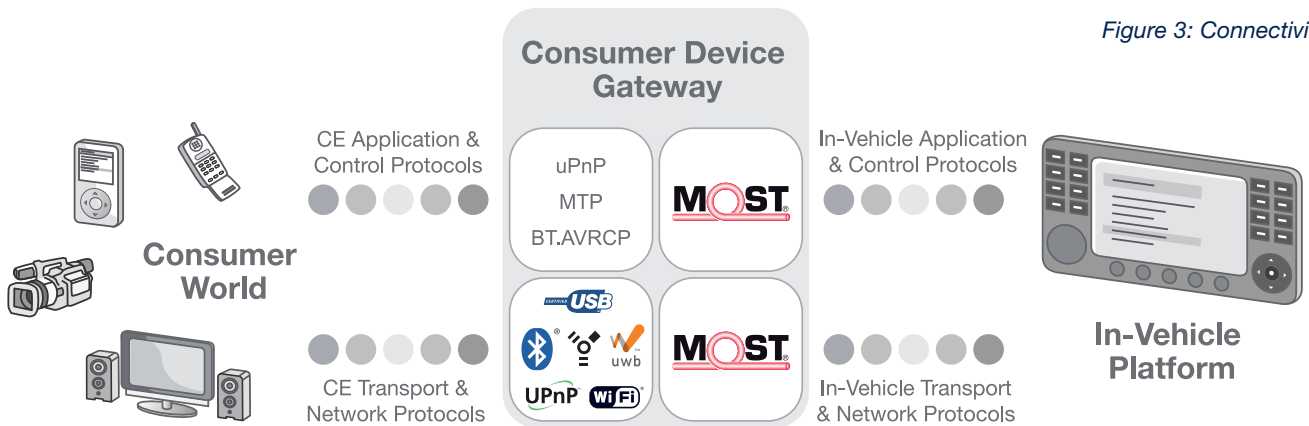


Figure 3: Connectivity

Connectivity

A MOST network is very easy to use due to simple connections. Plug-n-play features allow the network to identify the characteristics and features of new devices that are added to it. Virtual network management functions include channel allocation, system monitoring, addressing and power management. The synergy with consumer and PC industries is possible through consistency with PC streaming and operation with or without a PC. The most efficient and cost effective way to continue automotive innovations in all these areas is to allow the devices to be developed independently and then be connected together by a MOST consumer gateway (Fig. 3) using standard hardware and software interfaces. The clear trend is to enable the automotive system to attach the required features instead of providing every possible upcoming interface. With the consumer gateway MOST will offer a way to successfully decouple the automotive development cycles from the consumer electronics cycles. The automotive industry is coming together with the consumer industry to seamlessly extend the consumer's digital lifestyle to wherever the consumer is located – at home, in the car and everywhere else.

Video Transmission over MOST

MOST Specification Rev. 3.0 together with the newly defined MOST150 physical layer supports extensive video applications. Multiple high-definition video streams and multi-channel surround sound with premium quality of service can be transmitted, while simultaneously moving high loads of packet data around. Besides



Figure 4: Demonstration system using synchronous bandwidth of 150 Mbps

that, MOST meets all requirements for multimedia encryption (e.g., DTCP - Digital Transport Content Protection). The specifications today satisfy future requirements of automotive infotainment systems to move information over a single POF or UTP wire conductor and interconnect components such as multi-channel DVD players, satellite receivers, digital A/V players, digital storage devices, telematics systems and rear-seat entertainment systems. Figure 4 gives an impression

showing a system with a synchronous bandwidth of 150 Mbps: 3 HD A/V streams, 18 standard definition A/V streams and 1 Ethernet channel.

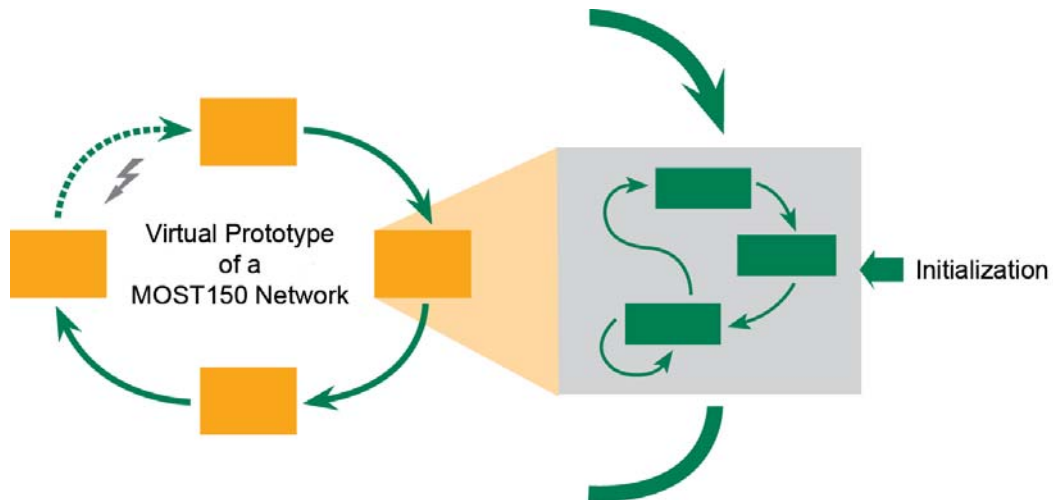
Easy Migration

The development of MOST Specification Rev. 3.0 has been accompanied by a cost/benefit analysis that led, on the one hand, to several innovations and on the other hand to a high level of backward compatibility. Existing applications can easily be reused in the new network just by modifying their network interfaces. MOST Specification Rev. 3.0 supports the new MOST150 physical layer with a bandwidth of 150 Mbps that allows carmakers to continue to use POF and LEDs as light sources. They can continue to use their established optical wire harness and assembly processes. This makes the transition to higher bandwidth networking a smooth evolution and leads to a high acceptance.

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www.mostcooperation.com

Validation of the MOST150 Specification by Virtual Prototyping



By use of common verification approaches, most of the design and specification errors can firstly be detected at a real hardware prototype or even worse in the vehicle by the end user. To decrease complexity and costs, a novel virtual prototyping approach for verification of distributed embedded systems in early design phases has been developed by FZI. The virtual prototyping approach has been applied for fast and automated verification of the MOST150 specification and reduced significantly the effort for modeling, verification and correction in comparison to cost-expensive error detection and correction in later phases.

The virtual prototyping approach has successfully been demonstrated by two newly specified algorithms taken from the MOST Specification Revision 3, namely ring break diagnosis (RBD) and sudden signal off (SSO) detection. The virtual prototype is based on SystemC and provides accurate simulation of the timing and functional

behavior. SystemC is a modeling and simulation language based on C++ for distributed embedded systems and Systems-on-Chip that covers concurrency and timing aspects during simulation of embedded software and the underlying hardware platform.

The test cases can be generated, started and verified automatically. It is possible to execute a set of more than 105 test cases by a standard desktop PC within a few days. A test case describes e.g. a specific MOST ring and device configuration in terms of number of devices, master/slave position, timer configurations, etc. Together with modern verification approaches for constraint-based test pattern generation and the corresponding coverage analysis it is possible to strongly reduce the needed test cases and simulation time. After simulation every test case with unexpected result is marked. These and other test cases can be re-executed to be analyzed and visualized by different tools. By using a waveform viewer selected

variables and states are shown together with timestamps. A co-simulation with Rhapsody shows the dynamic behavior by visualizing and highlighting abstract UML models of the system. Erroneous behavior, live- and deadlocks, timing errors, worst cases and other unwanted behavior can be detected in different network configurations.

For modeling and verification of the network it was possible to include the long experience in the domain of Systems-on-Chip verification. The used approach could be transfused to other network technologies. This can help to reduce verification costs and error detection in early development phases.

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MOST FOTs Chosen for Hyundai Autonet Infotainment Systems



Firecomms Ltd. has announced that its Fiber Optic Transceiver (FOT) components have been selected by Hyundai Autonet for use in its MOST infotainment networking products. Hyundai Autonet's products will be installed by car manufacturers, with Kia Motors the first adopter for its

Mohave sports utility vehicle. "The Korean market is presently one of the most exciting and innovative places in the world for the development of new automotive infotainment systems," said Niall Keegan, Firecomms' general manager, Asia Pacific. "Firecomms is very proud to be associated with this first release of MOST products by Hyundai Autonet and Kia Motors. We look forward to building on the close relationship developed with our Korean partners during the design of this new platform." MOST multimedia technology enables the networking of

feature-rich infotainment systems in automobiles by providing the means to distribute multimedia entertainment functions among the various control devices around the car. For example, a CD changer, radio, global positioning system, mobile telephone, and DVD player in an efficient ring network can utilize the MOST network to send crisp, static-free audio signals digitally to the amplifier.

www.firecomms.com

MediaLB® in the Automotive Market



MediaLB is a high-speed serial and synchronous chip-to-chip bus that connects application processors to the INICs (Intelligent MOST Network Interface Controller), independent of the actual MOST network speed (MOST25, MOST50, or MOST150). It transfers control, packet, audio- and video-streaming data to or from the MOST network, or between the application processors using a minimum of space and effort. "MediaLB is meanwhile established as a de facto automotive standard with comprehensive support by many semiconductor suppliers," said Mr. Koenigseder of BMW in Munich. Currently, all major suppliers of application SoCs that need to communicate over MOST have licensed MediaLB (Media Local Bus) for integration into their ICs. To date, twenty-two MediaLB interface implementations

in general-purpose microcontrollers, DSPs, graphic controllers and gateway controllers are available from the following companies: Altera, Freescale, Fujitsu, Harman/Becker, NEC, Oki, Parrot, Renesas, TI and Toshiba. More than twenty new implementations are under development and will be announced shortly. In recent press releases, Altera announced that their Paris platform will incorporate MediaLB and as did Fujitsu announcing that the MB91F467M will include MediaLB. ICs with MediaLB interface allow seamless interfaces to SMSC's INICs, representing a significant contribution to reducing the cost of implementing MOST nodes.

www.medialb.de

Innovative Data Logging with Practical Perspectives



Telemotive presents blue PiraT for consistent recording and meticulous analysis. blue PiraT is the data logger which was developed and specially optimized for the automobile industry. Its name combines the company's

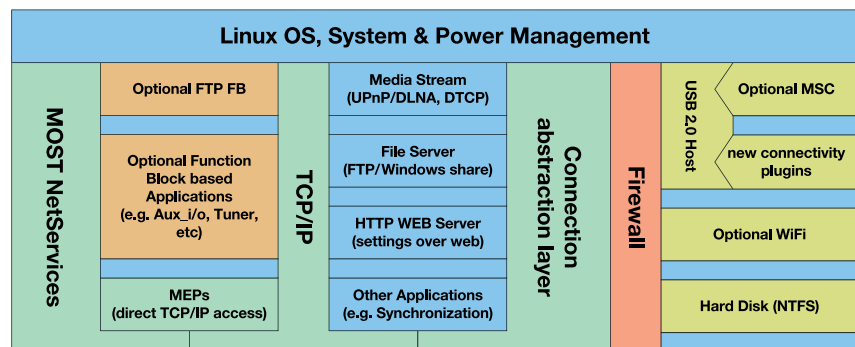
color blue with a prospect of the functionality which it offers to customers. PiraT stands for "Processing information, recording and analyzing Tool". It is the ideal device in order to monitor the communication of the bus systems in vehicles. Bus data is precisely recorded. Based on corresponding overviews and records, information can be selected and transmitted to the laptop or PC via Ethernet to be analyzed. The fitting software "blue PiraT Client" ensures comfortable data

transmission and configuration. blue PiraT may be adjusted to very individual bus system worlds. Designed for CAN, MOST and RS232/RS422, blue PiraT undertakes the data recording with a synchronous time stamp on a 20 GB hard drive. The power management with an off and on function with corresponding bus activities is just as inclusive as the voltage bridging for 1.5 s.

www.telemotive.de

Network Attached Storage and Data Gateway for MOST

Recent infotainment and telemotive applications need more and more storage. At the same time MOST150 provides an effective TCP/IP data transfer for new generation infotainment systems. A trivial analogy from the IT world can be transferred: It is more efficient to implement one "File Server" for all "users", rather than add mass storage to each application separately. An optional wireless data link layer can upload content to the central storage, and provide Internet access for all the applications. Dension Audio Systems has decided to create a fully automotive and MOST compliant Network Attached Storage device (NAS) with wireless Data Gateway functionality. This way Dension will offer an off-the-shelf device for scalable and future proof system



architectures, soon. NAS runs on a 533 MHz Intel IXP425 processor, designed specially for high speed data handling applications. NAS is featured with 16 MB SDRAM and 8 MB Flash Memory, an ATA port for Automotive HDD and 2 high speed USB Host for external storage or future IT applications. The optional WiFi is solved via a mini-PCI card in order to always provide the fastest connectivity

(802.11.bgn at the moment). The software is based on Linux OS, but the kernel is optimized to the real time and automotive demand.

www.dension.com

MB91460 MCU Integrating MediaLB Interface



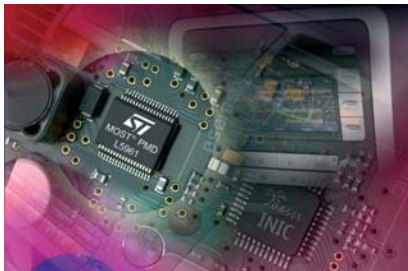
Fujitsu Microelectronics Europe (FME) implements SMSC's Media LocalBus (MediaLB) technology in the latest member of Fujitsu's 32-bit MB91460 microcontroller product series, the MB91F467M. These microcontrollers are designed to support high-performance automotive and industrial

applications to ensure fast data processing and distribution. The MB91F467M is a member of Fujitsu's MB91460 range of controllers designed for automotive applications including body control, dashboard and/or infotainment. The MB91F467M targets car audio applications and acts as a gateway between the MOST bus and up to ten I2S interfaces. Mathias Braeuer, Senior Manager of Automotive Marketing at FME commented: "With the MB91F467M, we have extended the support of in-car networking protocols from LIN, CAN and FlexRay to MOST. In this way, we are continuing to develop our MB91460 MCU

series as a single platform for use in several application fields." Based on Fujitsu's proven 0.18µm embedded flash technology and proprietary 32-bit RISC MCU core, the MB91F467M is optimised for applications requiring 32-bit performance at up to 80MHz and various communication interfaces. The on-chip memory includes 1088kB of flash, 64kB of RAM and an 8kB cache. Debugging is supported by the on-chip debug support unit, which can be directly connected to Fujitsu's ICE system. The MB91F467M is housed in an LQFP-216 package.

www.fujitsu.com

Integrated Power-Management Chip for Multimedia Networking



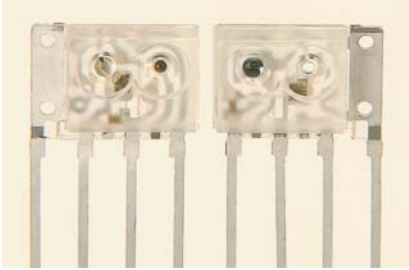
The new L5961 power management IC includes both the power supply and MOST compliant power-management control logic, together with enhanced diagnostic and full system monitoring (power supply, network status, wake-up events, temperature). A chipset combining the L5961 power-management IC and SMSC network processor can serve as a building block in any MOST network node, and provides signif-

icantly more independence from the individual applications that are connected to the network, in terms of turn-on/off timing and device failure, for example. Additionally, the combined chipset, once validated, can be placed in any MOST application without having to be redesigned and revalidated each time. ST's integration of both the power-management control logic and power supply within the L5961 therefore provides several key advantages for automotive OEMs, including significant PCB space savings, lower cost, lower cost of ownership and lower stand-by-mode power consumption, helping to meet specifications recently issued by many leading car manufacturers.

In particular, the device features multiple power modes, including an Ultra-Zero Power Mode that offers a typical quiescent current of only 5 microamps, a considerably lower value than that achieved with discrete components.

www.st.com

New Dual Voltage 3.3V/5V MOST25 FOT



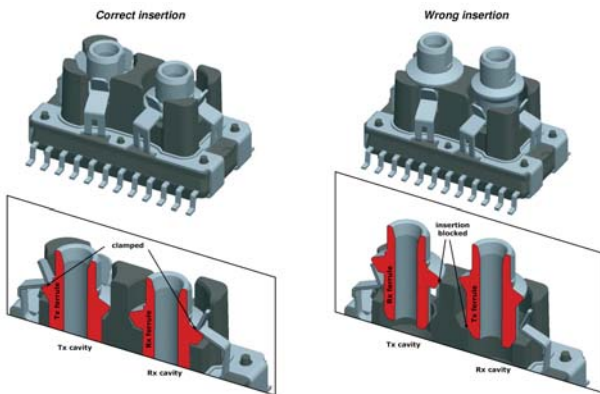
Firecomms new MOST 1.1 transmitter and receiver Fiber Optic Transceiver (FOT), FCM330K, has received certification for compliance with the MOST Specification Rev. 1.1 physical layer at operating voltages of 3.3V and 5V at both 44KHz and 48KHz.

Currently in production, Firecomms' FCM330K FOT gives developers the freedom and flexibility to design solutions around legacy 5V or newer 3.3V systems. Firecomms' transceivers are based around the company's novel Resonant Cavity LED (RCLED) technology which, when coupled with integrated lens' and low-cost CMOS-based receivers, allows for generous optical budget allowances when compared to the MOST Specification Rev. 1.1 requirements. Firecomms' FCM330R transmitter and FCM330D receiver are state-of-the-art four-pin,

low-cost plastic packaged components. With the transmitter's minimum output power of -8dBm and a receiver sensitivity of -26dBm, the FCM330K enables an optical budget in excess of 6dB over the MOST Specification Rev. 1.1. The components operate over a temperature range of -40°C to 95°C. Further enhancements planned by Firecomms to this family of transceivers include reflow solderability and 105°C functionality.

www.firecomms.com

MOST150 Transceiver Integrates Automotive Connector



The recently introduced Melexis MLX75605 is a single package solution for a FOT, dedicated for MOST network. The optical package is made using cavity molding. This allows the use of black molding compounds with TCE (Temperature Coefficient of Expansion) fully matched to the lead frame TCE. The result is superior TCE performance and compatibility to lead free SMD

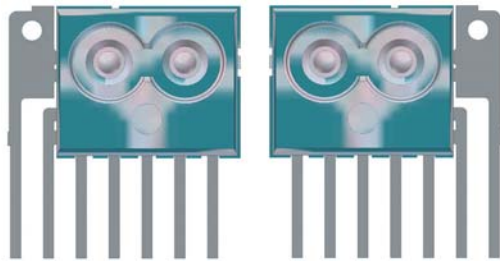
stands Moisture Sensitivity Level #3 as well as lead free SMD assembly processes according IPC/JEDEC J-STD-020. This means it withstands temperature shocks of 245 °C +0 °C/-5 °C during at least 30 sec. In order to prevent contamination during assembly and soldering, devices are delivered with a protective Kapton® tape (by Dupont) on the top. This Kapton tape can be easily removed

soldering processes and ROHS standards. MLX75605 has been designed with a flat area with a cross section of at least 6 mm on its top surface. This allows the device to be handled by the vacuum pick-up head of a standard pick & place SMD machine. MLX75605 with-

before ferrule insertion. Insertion of pigtailed is straightforward. The ferrule is locked by a spring embedded in the package. The guaranteed retention force of the ferrule by this spring is at least 8 Newtons. The spring is anchored on the 24 pin SOIC packages by dedicated "Anchors" at the SOIC bottom. The cavities for ferrule insertion of the package are designed in such a way that insertion of the Tx and RX ferrules of the pigtail into wrong coupling hole is not possible. Technical illustrations are available which detail the design methods employed to achieve this assembly aid. Features and benefits include 24 pin SOIC Package, embedded ferrule for clamping of pigtaile, TX and RX pigtail cannot be inserted into wrong part cavity, and pick and place by standard equipment.

www.melexis.com

MOST150 Side-Looker Transceivers



Avago Technologies will offer superior FOTs for MOST150 high-speed automotive infotainment networks. The components use a dedicated chipset with a 3.3V supply voltage and high-

speed LEDs with an improved conventional structure instead of temperature sensitive resonant cavity (RC) LEDs. Thereby, a stable temperature performance can be accomplished without complex temperature compensation techniques. The components are offered in the same field-proven clear mold side-looker package as used for MOST25. These have 7 pins to support differential signals

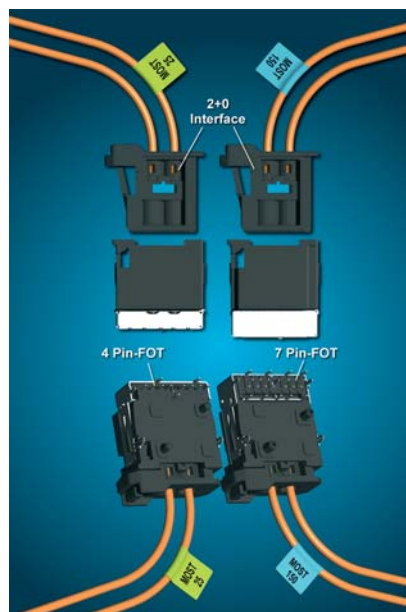
and additional functionality. Avago will support a 2+0 header approach for MOST150 similar to the current MOST25 2+0 header approach. The Avago Technologies MOST150 transmitter and receiver will be fully compliant to the MOST specification. Samples will be available in November 2008 and the FOTs are planned to be ready for mass production mid 2009.

www.avagotech.com

MOST150 – The Micro Pigtail Solution

The introduction of MOST150 will continue to utilize Plastic Optical Fiber (POF) physical layer currently used on MOST25. This limits the overall impact of the change over to the existing wiring harness logistics channel. What will change is the Light Source. This has resulted in a discussion regarding the best method to package the source and photodiode. Proposals have been made based on surface mount devices (SMD). This concept has the advantage of removing the thermal sensitive POF from the soldering process, but proves costly from a material and a heavily manual assembly effort. Another option is the Side-Looker form which is already available for MOST25 and can be extended to cover the MOST150 requirements. Tyco Electronics will promote the Micro Pigtail option, fulfilling the MOST150 requirements and also compatible to the Reflow (Pin in Paste) process requirements of the Tier 1 manufacturers. In the

attached picture, the difference can be seen between the existing MOST25



Micro Pigtail and the comparison to the equivalent MOST150 version. Both products are based on the MOST 2+0 interface. The parts also require the same height and width on the PCB. The first difference can be seen by the 2,4 mm length difference

due to the second FOT pin row, the MOST150 FOT will be based on a 7 pin version. The next difference is where the thermal sensitive POF is replaced by a Glass Optical Fiber (GOF). This will allow the MOST150 Micro Pigtail to be placed on the PCB automatically (Pick and Place) and then allow the Micro Pigtail to be processed to the PCB by Pin in Paste technology. This will eliminate the existing costly wave soldering process. In comparison to the SMD version a number of critical advantages are present. Firstly a cost advantage, due to the material and process savings. Secondly space savings on the PCB, as only one element is required as well as a lower height requirement on the device. Thirdly, quality as the part is processed within a fully controllable automatic operation.

www.tycoelectronicsmost.com

MOST Aftermarket



The goal of companies providing consumer electronics integration solutions is to allow consumers the opportunity to add products not thought of during the development of the vehicle. Many opportunities to connect what consumers want exist for products like iPod, MP3 players, DVD players,

BlackBerrys, backup cameras and Bluetooth hands-free solutions including audio streaming. The aforementioned products are many times not available at the time the vehicle is being released however the ability to connect has been included in the vehicle network and radio. This is where an aftermarket company like NAV-TV can be a solution provider for these types of technology enabled vehicles. NAV-TV was also one of the first to provide aftermarket solutions for vehicles equipped with the MOST network. Their first solution for MOST connectivity was in 2005 and was an

audio/video interface "OPV1R" for the Range Rover that allowed addition of a backup camera and audio input. Since that time they have worked to develop solutions that fulfill consumer demand and have developed connectivity for iPod, Bluetooth and audio/video for Audi, Aston Martin, BMW, Mercedes, Porsche, Range Rover and Volvo. The most recent solutions allow the dealer, and in some cases the consumer, to have the ability to update their installed product when revisions are made to improve product performance. This is done through a USB port on the product and in some cases such as the Bluetooth solutions the updates can be installed via Bluetooth.

www.nav-tv.com

Hands-free Bluetooth MOST Products



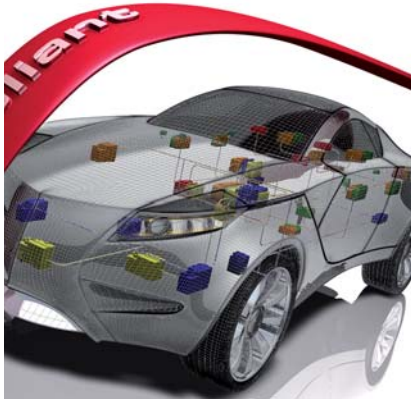
With the addition of fiber optic communications, Ventura Technology is ready to bring its advanced software and hardware capabilities into the latest format of OEM integration. The Bluetooth interface combines several technologies into one interface designed for seamless factory operation and simple installations. Extensive testing and product design insure reliable

Bluetooth phone additions to vehicles. Parrot technology is used as a gateway for Bluetooth operations with the Ventura MOST interface providing full integration with the factory system. This interface is an economical alternative to dealer systems costing substantially more while providing greater flexibility and features for the customer. The

VT-AUDIMOSTCK3100-100 allows the user to experience all of the premier features of the popular Parrot CK3100 Bluetooth-enabled handsfree system, using the factory screen and controls. The VT-AUDIMOSTCK3100-100 interfaces directly with the vehicle's MOST data bus to enable the same features available on the aftermarket version of the CK3100: address book, no extra remotes or screens needed, answer/hang up using steering wheel controls, firmware upgradeable via USB, full support for factory MMI console controls, and Parrot extensive Bluetooth phone compatibility.

www.venturatechnology.com.mx

Delphi Makes MOST Devices Fit for Certification



MOST conformity of ECUs can be assured even during their development. Delphi uses CANoe's Compliance Test Add-On to regularly verify the conformity to the MOST specification. This enables timely identification of

those changes made to the ECUs that have negative effects on MOST relevant behavior. Corrections can be made early and be verified without incurring additional costs for testing at a test laboratory. The tests can be parameterized to a great extent which also enables testing to stricter requirements than those defined in the MOST Compliance Tests. This gives the test engineer a way to evaluate whether the ECU will also behave MOST conformant in limit ranges. To attain greater testing depth, the tests can also be executed in endurance tests or under different load situations. The CANoe.MOST programming envi-

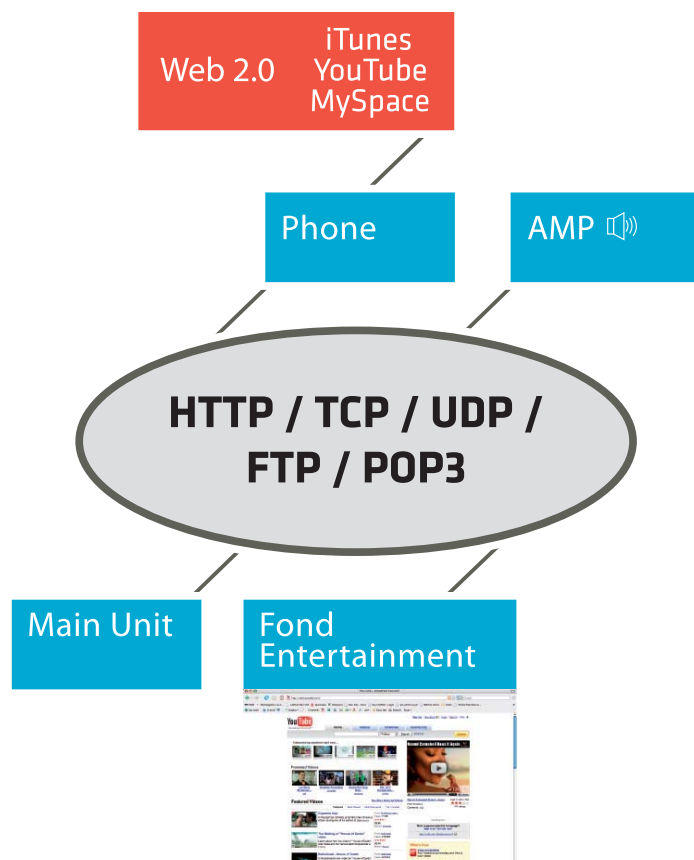
ronment provides all interfaces needed for this purpose. The tests can be automatically executed without special test hardware, and it is easy to integrate them in regression tests conducted at regular intervals. In executing the compliance tests, CANoe.MOST automatically creates a detailed test report. Together with the log file, this simplifies error detection and correction. Vector provides the Core Compliance Add-On free-of-charge to all CANoe.MOST users who have a maintenance contract.

www.vector-worldwide.com

Testing Ethernet Scenarios Based on MOST150

TTsuite MOST now supports not only MOST25 oPhy, MOST50 ePhy but also MOST150 oPhy. One of the major new features of the new generation of MOST is the included Ethernet channel which opens a range of new possibilities for Internet applications in cars. Today TTsuite MOST already includes all the important Internet protocols such as HTTP, FTP, SMTP, SQL, POP3, SNMP, as well as TCP and UDP. In combination with MOST features like Function Block Controllers and Simulators, Synchronous Channel Administration and MOST High Protocol Communication it is now possible to test complex scenarios based on MOST150 technology. This makes it possible to test future Ethernet-based applications today.

www.ruetz-system-solutions.com



All-inclusive MOST Network Analysis Solution



SMSC offers the OptoLyzer G2 Premium Bundle, a new high-end solution part of SMSC's OptoLyzer G2

MOST Network Analysis family. The OptoLyzer G2 Premium solution comes with an OptoLyzer G2 3025o for MOST25 or an OptoLyzer G2 3050e for MOST50 and the following software extensions: MOST Radar, MOST Rapid Control, and INIC Remote Viewer. A key benefit is the availability of the broad set of ready-to-use software extensions without the need for additional configuration. As a result, the user can immediately and easily analyze the MOST network topology and investigate the states and properties of the respective devices with MOST Radar. Any INIC device in

the MOST network may be analyzed and the user can investigate their respective properties in detail with INIC Remote Viewer. Further benefits are the comprehensive control of other devices in the network and automate specific test procedures with MOST Rapid Control. Lastly, customers enjoy a discount when purchasing an OptoLyzer G2 Premium Bundle versus the purchase of separate components.

www.smsc-ais.com

MOST Inside

New Car Models Running with MOST Infotainment Networks



Audi Q5



BMW X6



Jaguar XF



SsangYong Chairman



Toyota Alphard



Toyota Crown



Volvo XC60



Volvo XC70

The MOST Cooperation Welcomes New Member Companies

Fiberdyne Systems

is a supplier of high quality MOST software solutions designed for the demanding needs of the automotive world. The company specializes in the growing needs for integrated infotainment systems within the cockpit of the automobile. As the entertainment systems become more complex, the need for seamless plug and play integration becomes greater and greater.

www.fiberdyne.com.au

GT Trading

develops and produces Hi-END Audio Amplifier under its brand STEG, AUDIOSYSTEM and ALOIA for car and home. The products are known for their audio quality certified even by EISA awards. Now GT trading is focusing its effort developing Kamaleon, the first aftermarket audio platform for MOST based cars. It allows end users to improve audio quality and integrate consumer electronic devices into the OEM system.

www.gttrading.it

LeCroy

is a leading provider of oscilloscopes, protocol analyzers and related test and measurement solutions that enable companies across a wide range of industries to design and test electronic devices of all types.

www.lecroy.com

Movimento

Automotive is based in Gothenburg Sweden, and part of the Movimento Group. Movimento was started in 2003 with a vision to develop simple and easy to use diagnostic and software download tools for the automotive industry today realizing a full covering suite of tools and services from design to workshop environment.

www.movimentoautomotive.com

Tata Consultancy Services

(TCS) with its experience in engineering, innovation and IT solutions, and a comprehensive portfolio of services partners with high-tech enterprises to provide end-to-end solutions that help them achieve product innovation, operational excellence and greater profitability.

www.tcs.com

Ventura Technology

was started in 1998 as an engineering and product development firm for automotive entertainment products. Their product portfolio includes complete lines of interface modules, both hardware based and software based, to accomplish a variety of tasks including video input, audio input, video in motion, MOST integration, iPod integration and Bluetooth hands free integration.

www.venturatechnology.com.mx

About MOST Cooperation

MOST (Media Oriented Systems Transport) is a multimedia networking technology optimized for (but not restricted to) use in cars. It enables transport of high quality of service audio and video together with packet data and real-time control over a single transmission medium. MOST offers transmission over Plastic Optical Fiber and Unshielded Twisted Pair copper physical layers under automotive conditions. MOST to date is used in over 60 car models and represents the communication backbone for their information and entertainment equipment. The MOST Cooperation is the organization through which MOST Technology is standardized and refined so that it continues to stay abreast of the latest industry requirements. Today it consists of 16 international carmakers and more than 75 key component suppliers. The MOST Cooperation is prepared to embrace efforts to further develop and standardize the technology for other industries. The MOST Cooperation was founded in 1998 to standardize MOST Technology as a global standard for multimedia networking. Audi, BMW, Daimler, Harman/Becker and SMSC as core partners form its Steering Committee.

Upcoming Events

MOST Forum 2008 in Stuttgart, Germany, on September 30th, 2008

At this International MOST conference the MOST Cooperation participates as knowledge partner to guarantee a high quality conference program. The cooperation will exhibit technology highlights and function as moderator opening the networking evening and conference.

www.mostforum.com

SAE Convergence Exhibition 2008 in Detroit, United States, on October 20th to 22nd, 2008

The MOST Cooperation will be showing its MOST50 and MOST150 Technology highlights at the SAE Convergence Exhibition. Please visit us at Booth 913 at this important event of the international automotive and transportation electronics community.

www.sae.org/events/convergence/

Ninth MOST Interconnectivity Conference Asia in Seoul, South Korea, on November 5th, 2008

The MOST Cooperation will be hosting the ninth MOST Interconnectivity Conference Asia (formerly Japan Interconnectivity Conference). During the one-day convention representatives of the MOST Cooperation will present recent achievements and roadmap to Asian carmakers and their suppliers.

www.mostcooperation.com

First International Automotive Electronics Technology Expo (CAR-ELE JAPAN) in Tokyo, Japan, on January 28th to 30th, 2009

MOST Cooperation will present latest technology achievements to the Japanese public at this International Automotive Electronics Show situated at the Tokyo Big Sight.

www.car-ele.jp/en/

Eleventh All Members Meeting in Frankfurt, Germany, on March 31st, 2009

The members of the MOST Cooperation will meet for their annual All Members Meeting to review latest achievements and outline the roadmap for 2009.

www.mostcooperation.com

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