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Road vehicles — Media Oriented Systems Transport (MOST) —

Part 2: Application layer

Véhicules routiers — Système de transport axé sur les médias —

Partie 2: Couche d'application

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Foreword

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This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 31, *Data communication*.

A list of all parts in the ISO 21806 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The Media Oriented Systems Transport (MOST) communication technology was initially developed at the end of the 1990s in order to support complex audio applications in cars. The MOST Cooperation was founded in 1998 with the goal to develop and enable the technology for the automotive industry. Today, MOST[1)] enables the transport of high quality of service (QoS) audio and video together with packet data and real-time control to support modern automotive multimedia and similar applications. MOST is a function-oriented communication technology to network a variety of multimedia devices comprising one or more MOST nodes.

Figure 1 shows a MOST network example.

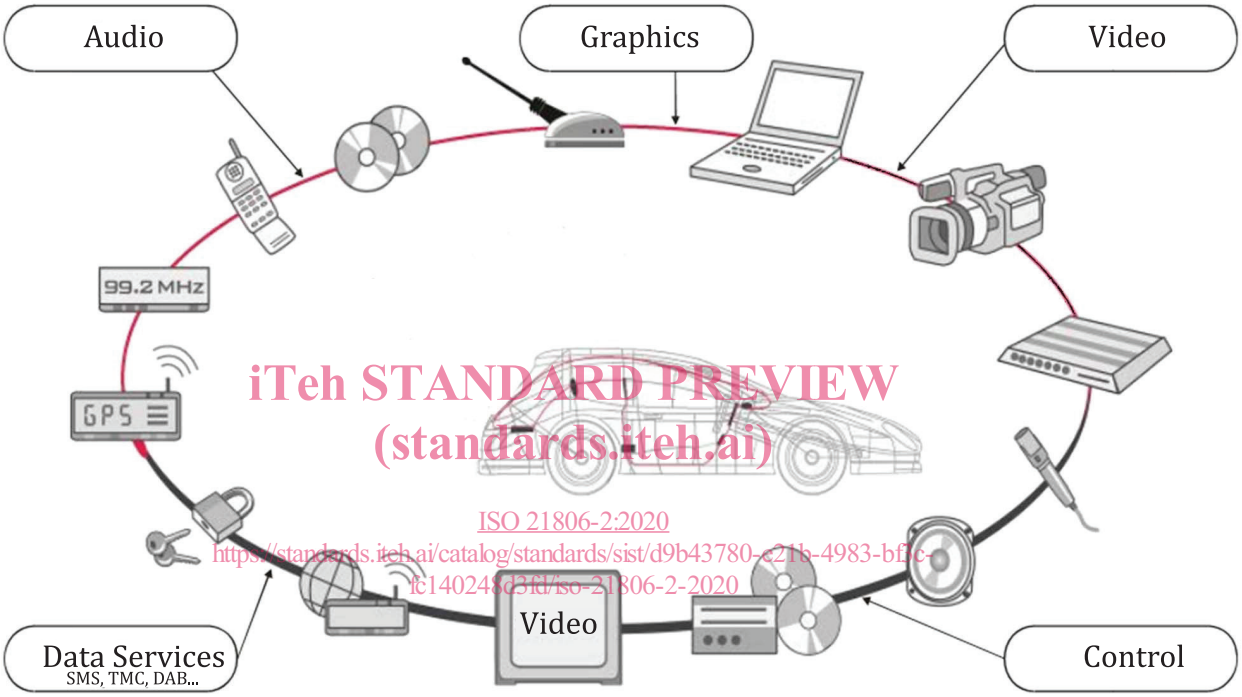

Figure 1 — MOST network example

The MOST communication technology provides:

— synchronous and isochronous streaming,

— small overhead for administrative communication control,

— a functional and hierarchical system model,

— API standardization through a function block (FBlock) framework,

— free partitioning of functionality to real devices,

— service discovery and notification, and

— flexibly scalable automotive-ready Ethernet communication according to ISO/IEC/IEEE 8802-3[7].

MOST is a synchronous time-division-multiplexing (TDM) network that transports different data types on separate channels at low latency. MOST supports different bit rates and physical layers. The network clock is provided with a continuous data signal.

1) MOST® is the registered trademark of Microchip Technology Inc. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO.

Within the synchronous base data signal, the content of multiple streaming connections and control data is transported. For streaming data connections, bandwidth is reserved to avoid interruptions, collisions, or delays in the transport of the data stream.

MOST specifies mechanisms for sending anisochronous, packet-based data in addition to control data and streaming data. The transmission of packet-based data is separated from the transmission of control data and streaming data. None of them interfere with each other.

A MOST network consists of devices that are connected to one common control channel and packet channel.

In summary, MOST is a network that has mechanisms to transport the various signals and data streams that occur in multimedia and infotainment systems.

The ISO standards maintenance portal (https://standards.iso.org/iso/) provides references to MOST specifications implemented in today's road vehicles because easy access via hyperlinks to these specifications is necessary. It references documents that are normative or informative for the MOST versions 4V0, 3V1, 3V0, and 2V5.

The ISO 21806 series has been established in order to specify requirements and recommendations for implementing the MOST communication technology into multimedia devices and to provide conformance test plans for implementing related test tools and test procedures.

To achieve this, the ISO 21806 series is based on the open systems interconnection (OSI) basic reference model in accordance with ISO/IEC 7498-1[3] and ISO/IEC 10731[5], which structures communication systems into seven layers as shown in Figure 2. Stream transmission applications use a direct stream data interface (transparent) to the data link layer.

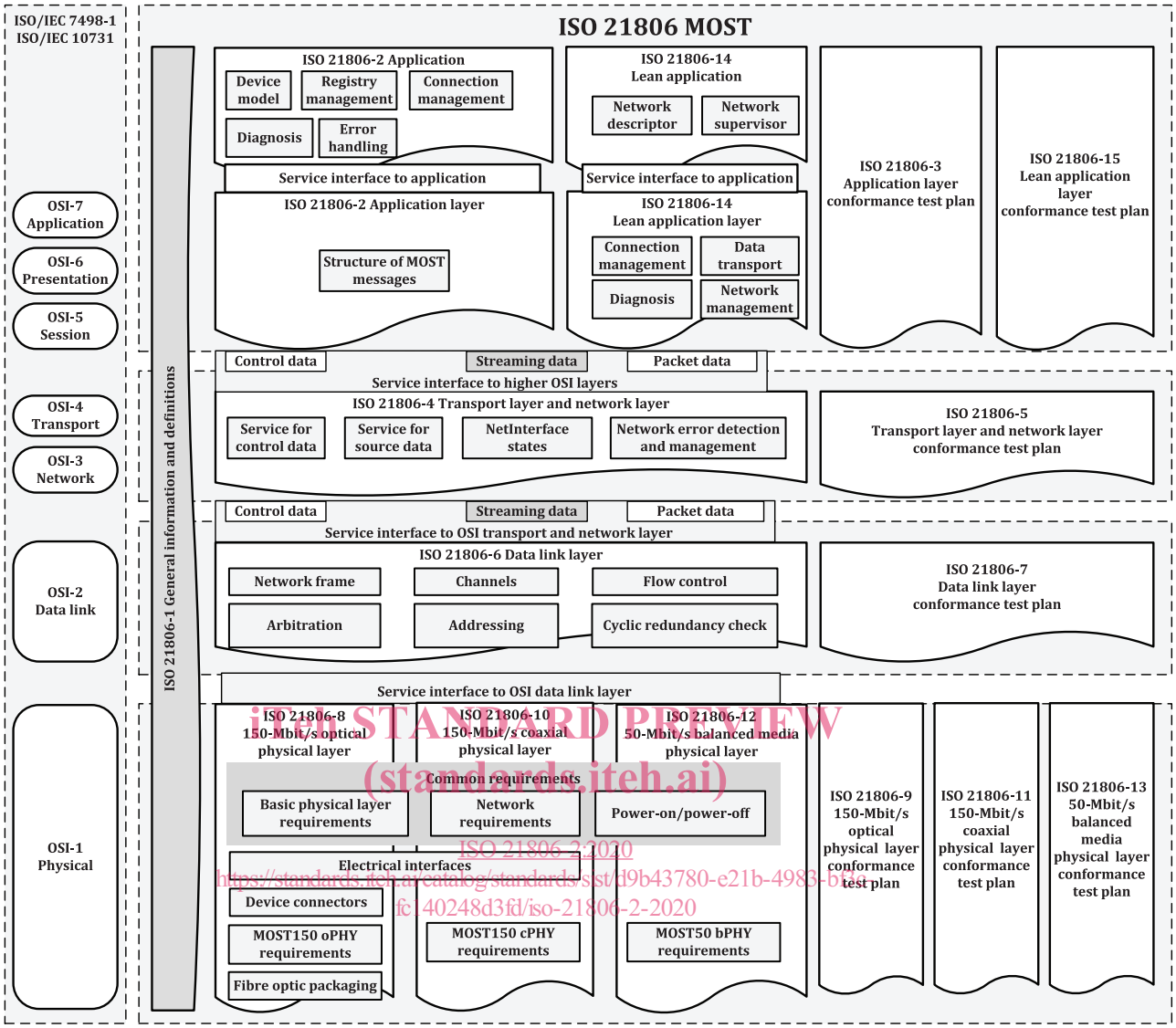

Figure 2 — The ISO 21806 series reference according to the OSI model

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Road vehicles — Media Oriented Systems Transport (MOST) —

Part 2: Application layer

1 Scope

This document specifies a part of the application, the application layer, and the presentation layer.

The application covers the

— device model,

— registry management,

— connection management for streaming data,

— diagnosis, and

— error handling.

The application layer covers the structure of MOST messages consisting of

— addressing,

— function block identifiers,

— instance identifiers,

— function identifiers,

— operation types, and

— timing definitions.

The presentation layer covers the definition of data, basic data types and function classes.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 21806-1, *Road vehicles — Media Oriented Systems Transport (MOST) — Part 1: General information and definitions*

IEEE 754-2008, *IEEE Standard for Floating-Point Arithmetic*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21806-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
administrative FBlock
FBlock (3.10) that has an administrative purpose, which is specific to the MOST network

3.2
central registry
lookup table in the *NetworkMaster* (3.13) *FBlock* (3.10) for cross-referencing logical node addresses and functional addresses

3.3
central registry state
indicator for the availability of the *central registry* (3.2)

3.4
connection manager
entity that manages streaming connections

3.5
ConnectionMaster
FBlock (3.10) that provides the interface to the *connection manager* (3.4)

3.6
controller
client that uses the services of an *FBlock* (3.10) instance

3.7
decentral registry
lookup table in a *NetworkSlave* (3.14) for determining available *FBlocks* (3.10) and cross-referencing logical node addresses and functional addresses

3.8
FBlock scan
process of collecting information from the *NetworkSlaves* (3.14), performed by the *NetworkMaster* (3.13)

3.9
function
access to a feature of a service in an *FBlock* (3.10)

3.10
function block
FBlock
group of *functions* (3.9) that are particular to a specific application

3.11
method
function (3.9) that can be started and which leads to a result after a certain period of time

3.12
MOST message
message sent with functional address (FBlockID, InstID) as part of the payload

3.13
NetworkMaster
node that controls the *central registry state* (3.3) and administrates the *central registry* (3.2)

3.14
NetworkSlave
node that reports its *FBlocks* (3.10) to the *NetworkMaster* (3.13)

3.15
notification
mechanism for informing *controllers* (3.6) about changes in a *property* (3.19)

3.16
notification matrix
table that contains the logical node addresses of *controllers* (3.6) that require status updates when a *property* (3.19) changes

3.17
PowerMaster
node that controls MOST network startup and shutdown

3.18
PowerSlave
node that provides *functions* (3.9) for MOST network startup and shutdown

3.19
property
function (3.9) for reading or writing a value or status within an *FBlock* (3.10)

4 Symbols and abbreviated terms

4.1 Symbols

--- empty cell/undefined

4.2 Abbreviated terms

AL	application layer
APP	application
CDC	compact disc changer
CRC	cyclic redundancy check
DAB	digital audio broadcasting
DiagID	diagnosis identifier
DSP	digital signal processor
DTCP	digital transmission content protection
DVD	digital video disc
ECL	electrical control line
ESDR	ETSI satellite digital radio
ETSI	European Telecommunications Standards Institute
FBlock	function block

FBlockID	function block identifier
FktID	function identifier
GSM	global system for mobile communications
HDCP	high-bandwidth digital content protection
HMI	human machine interface
InstID	instance identifier
JIS	Japanese Industrial Standard
LSb	least significant bit
MNC	MOST network controller
MOST	Media Oriented System Transport
MSb	most significant bit
NCE	network change event
OPType	operation type
QoS	Quality of Service
PL	presentation layer
RCC	remote control communication
RDS	radio data system
ROM	read-only memory
SMS	short message service
TMC	traffic message channel
TPEG	Transport Protocol Experts Group
TV	television
UTF	Unicode transformation format

5 Conventions

This document is based on OSI service conventions as specified in ISO/IEC 10731[4].

6 APP — Application

6.1 APP — Device model

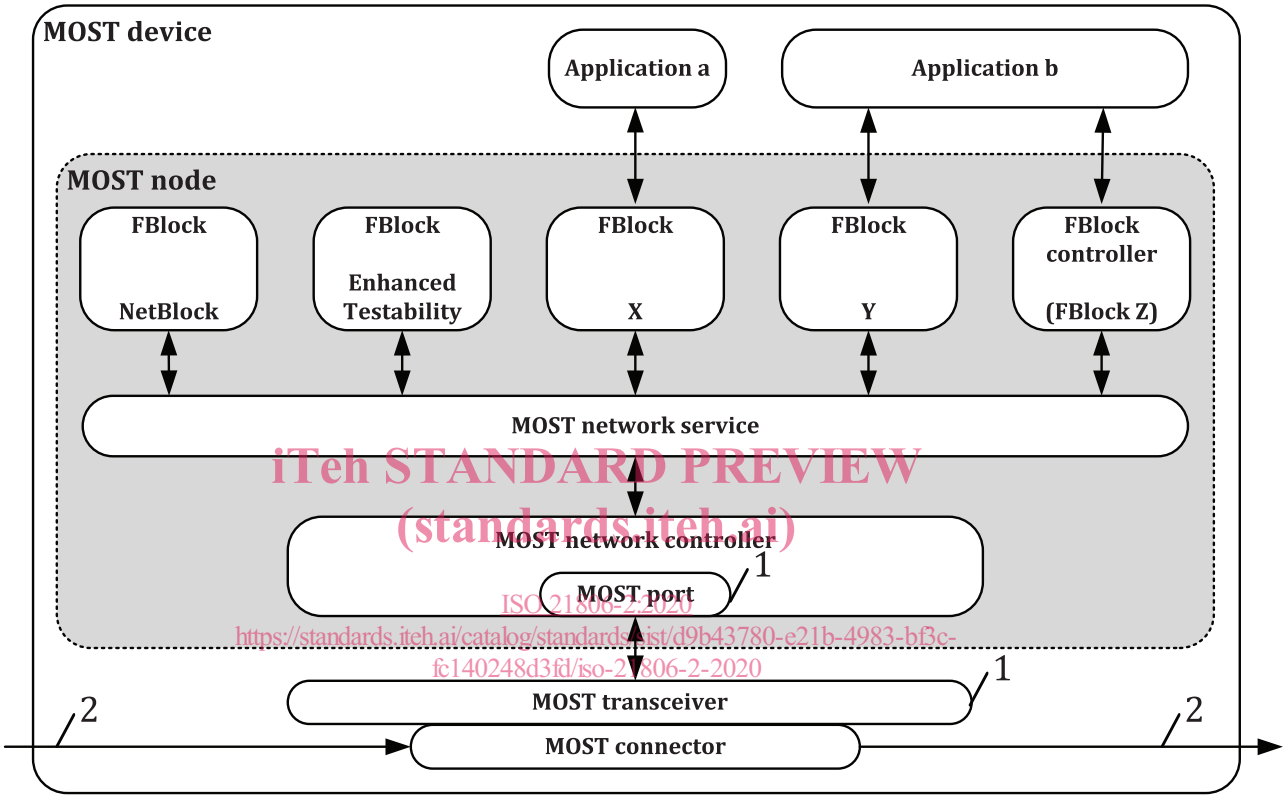
The following subclauses describe the logical model of a MOST device. A MOST device is a physical unit that can be connected to a MOST network via a MOST network controller (MNC).

A MOST device contains at least one MOST node, remote-controlled node, or listen-only node. A MOST device implements at least one MNC and MOST transceiver. A device that does not contain a MOST node or a remote-controlled node is beyond the scope of this document.

Between the FBlocks and the MNC, the MOST network service forms an intermediate layer providing routines to simplify the handling of the MNC. A MOST port is the MNC's connection point to the MOST transceiver.

Figure 3 shows a model of a MOST device with one MOST node and one MOST transceiver. In this example, the MOST node contains two application FBlocks, X and Y, and a controller for FBlock Z.

Application FBlocks are used to group functions that are particular to a specific application, for example radio or telephone. Administrative FBlocks group functions that have an administrative purpose, for example NetworkMaster or NetBlock.



Key

1 multiple instances are possible

2 MOST network

Figure 3 — Example of a MOST device

6.2 APP — Node kinds

6.2.1 APP — MOST nodes

The requirements in this subclause refer to distinctive characteristics of MOST nodes.

REQ	8.1 APP – MOST nodes – Structure
A MOST node shall implement the MOST network service and the MNC.	

REQ	8.2 APP – MOST nodes – Implement NetBlock
A MOST node shall implement the FBlock NetBlock.	