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TECHNICAL SPECIFICATION

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inside

Electronic railway equipment – On-board multimedia and telematic subsystems for railways –
Part 2: Video surveillance/CCTV services

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ELECTRONIC RAILWAY EQUIPMENT – ON-BOARD MULTIMEDIA AND TELEMATIC SUBSYSTEMS FOR RAILWAYS –

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Technical Specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 62580-2, which is a Technical Specification, has been prepared by IEC technical committee 9: Electrical equipment and systems for railways.

The text of this specification is based on the following documents:

Enquiry draft	Report on voting
9/2112/DTS	9/2151A/RVC

Full information on the voting for the approval of this Technical Specification can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62580 series, published under the general title *Electronic railway equipment – On-board multimedia and telematic subsystems for railways*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

* transformed into an International standard,

* reconfirmed,

* withdrawn,

* replaced by a revised edition, or

* amended.

A bilingual version of this publication may be issued at a later date.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

The IEC 62580 series defines on-board multimedia and telematic sub-systems (OMTS) for railways, so as to achieve interoperability between subsystems in the same vehicle and between subsystems in different vehicles of the same train.

The on-board video surveillance/CCTV system is a subsystem of OMTS, providing services for on-board surveillance and the security issue of the train and passengers. It serves as the crucial source of information for train operator, security organizations and first responders. The basic system functionality contains video/audio capture, recording, retrieval, replay, display, etc.

This Technical Specification will be useful to those responsible for establishing operational requirements, writing specifications, selecting devices, installing, commissioning, using and maintaining the on-board video surveillance/CCTV system. This specification is divided into the following sections:

a) system breakdown: divides the on-board video surveillance/CCTV system into four components based on their functionality, including video capture component, video storage component, video display component and video analysis component;

b) function breakdown: gives the function list that system may offer from the user's point of view, and presents the function blocks of system according to the functional breakdown, which includes video environment, system management and system security. Within video environment, it contains the basic functions that system could provide, such as to capture video, to record video, to retrieve video, to export video, to replay video, to display video, to analyse video and manage interconnection;

c) requirements: describes the requirements of video environment, system management and security as well as video transmission in which transmission performance, protocol and IP interoperability implementation based on Web service have been introduced;

Some use cases of the on-board video surveillance/CCTV system are given in Annex A.

ELECTRONIC RAILWAY EQUIPMENT – ON-BOARD MULTIMEDIA AND TELEMATIC SUBSYSTEMS FOR RAILWAYS –

Part 2: Video surveillance/CCTV services

1   Scope

This part of IEC 62580, which is a Technical Specification, specifies the on-board video surveillance/CCTV system functionality and requirement for the purpose of interoperability between components of on-board video surveillance/CCTV systems in the same vehicle and subsystems in different vehicles of the same train, which means two levels of interoperability are considered, one is interoperability between components and another is between subsystems.

This specification gives guidelines for:

• system breakdown structure of the on-board video surveillance/CCTV system;

• function breakdown structure of the on-board video surveillance/CCTV system, and

• requirement of the on-board video surveillance/CCTV system.

This specification is applicable to any type of train, for example open trains, multiple unit trains and closed trains.

As illustrated in Figure 1, this part of IEC 62580 provides video surveillance/CCTV services of monitoring, recording and retrieval of data, etc. This specification follows the general OMTS requirement defined in IEC 62580-1. The communication network of on-board video surveillance/CCTV system is based on the network defined by the IEC 61375 series, in which IEC 61375-2-5 and IEC 61375-3-4 define communication between and within consists, respectively, IEC 61375-2-3 lays out the communication profile for the backbone which is used for the train coupling, and IEC 61375-2-6[1] provides the support for the communication between on-board system and ground wayside infrastructures. The general system requirement of on-board video surveillance/CCTV system is developed based on IEC 62676 series with supplementing the special requirement for railway application. For interoperability implementation between components of system and subsystems, this specification makes reference to IEC 62676-2-3, which specifies a compliant IP video protocol and interface based on Web services. Special requirements for railway, such as device discovery between consists and within a consist, as well as network compliant to the IEC 61375 series are also defined here. In addition, IEC 62676-4 gives recommendations and requirements for the selection, planning, installation, commissioning, maintaining and testing for use in security applications. Finally, the requirement of exported data of on-board video surveillance/CCTV system is compliant with ISO 22311 if system is for security purpose.
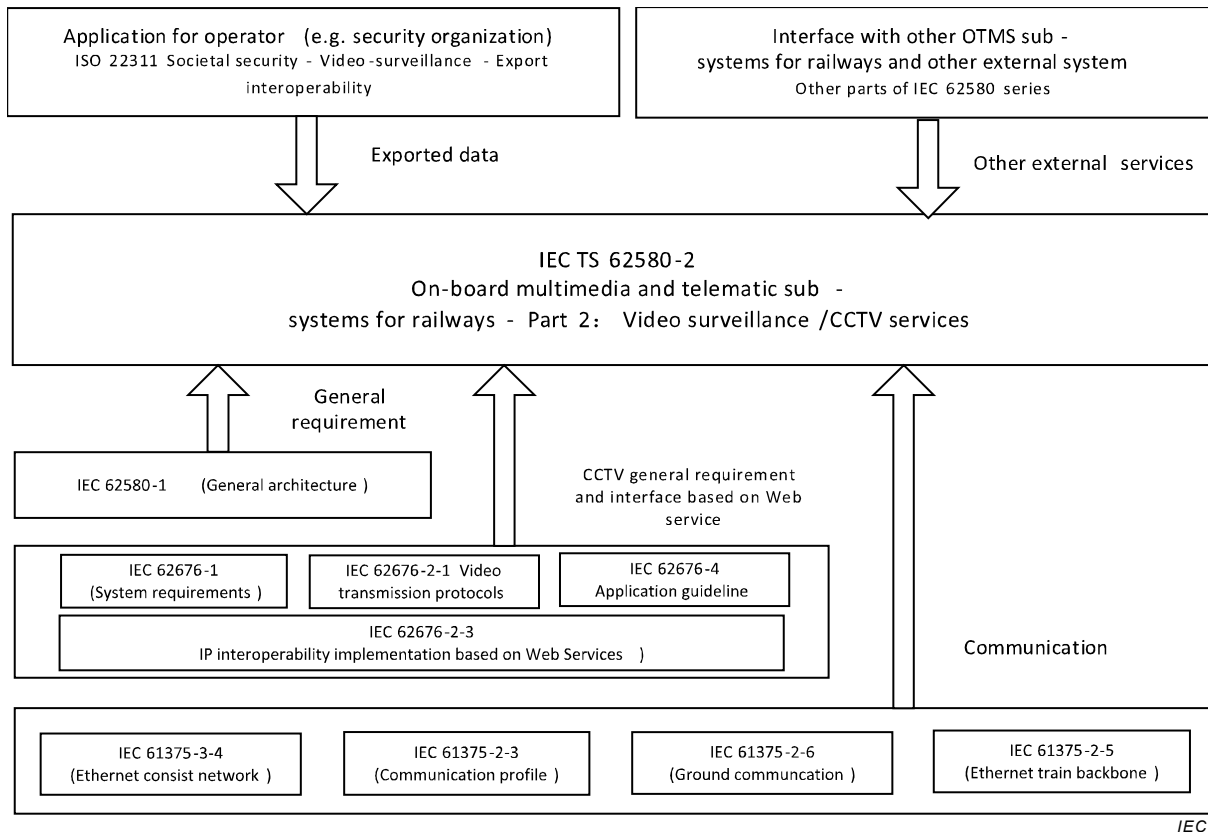
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1   Under consideration.

Figure 1 – Relation of IEC TS 62580-2 with other standards

2　Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61375 (all parts), *Electronic railway equipment – Train communication network (TCN)*

IEC 61375-2-3:2015, *Electronic railway equipment – Train Communication Network (TCN) – Part 2-3: TCN communication profile*

IEC 61375-2-5, *Electronic railway equipment – Train Communication Network (TCN) – Part 2-5: Ethernet Train Backbone*

IEC 61375-2-6 [2], *Electronic railway equipment – Train Communication Network (TCN) – Part 2-6: On-board to ground communication*

IEC 61375-3-4, *Electronic railway equipment – Train Communication Network (TCN) – Part 3-4: Ethernet Consist Network (ECN)*

IEC 62580-1:2015, *Electronic railway equipment – On-board multimedia and telematic subsystems for railways – Part 1: General architecture*

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2　Under consideration.

IEC 62676-1-1:2013, *Video surveillance systems for use in security applications – Part 1-1: System requirements – General*

IEC 62676-1-2:2013, *Video surveillance systems for use in security applications – Part 1-2: System requirements – Performance requirements for video transmission*

IEC 62676-2 (all parts), *Video surveillance systems for use in security applications – Part 2: Video transmission protocols*

IEC 62676-2-3:2013, *Video surveillance systems for use in security applications – Part 2-3: Video transmission protocols – IP interoperability implementation based on Web services*

ISO 22311, *Societal security – Video-surveillance – Export interoperability*

IEEE 802.1Q, *IEEE Standard for Local and metropolitan area networks – Media Access Control (MAC) Bridges and Virtual Bridged Local Area Networks*

RFC 2326, *Real Time Streaming Protocol (RTSP)*

RFC 3016, *RTP Payload Format for MPEG-4 Audio/ Visual Streams*

RFC 3550, *RTP: A Transport Protocol for Real-Time Applications*

RFC 3551, *RTP Profile for Audio and Video Conferences with Minimal Control*

RFC 3984, *RTP Payload Format for H.264 Video*

FERRIS, C., KARMARKAR, A, YENDLURI, P., *WS-I, Basic Profile Version 2.0 – Working Group Draft, October 2007 (available at* http://www.ws-i.org/Profiles/BasicProfile-2_0(WGD).html).