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**Video surveillance systems for use in security applications –
Part 2-32: Recording control and replay based on web services**
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**Systèmes de vidéosurveillance destinés à être utilisés dans les applications de
sécurité –**
<https://standards.iteh.ai/catalog/standards/sist/78d24b19-b26b-4545-b26b-4545-b26b-4545>
Partie 2-32: Contrôle d'enregistrement et lecture en fonction des services Web



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Partie 2-32: Contrôle d'enregistrement et lecture en fonction des services Web

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VIDEO SURVEILLANCE SYSTEMS FOR USE IN SECURITY APPLICATIONS –

Part 2-32: Recording control and replay based on web services

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This first edition, together with IEC 60839-11-31 and IEC 62676-2-31, cancels and replaces IEC 62676-2-3:2013.

This edition includes the following significant technical changes with respect to IEC 62676-2-3:2013:

- a) an export file format has been added.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
79/621/FDIS	79/623/RVD

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

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

A list of all parts in the IEC 62676 series, published under the general title *Video surveillance systems for use in security applications*, can be found on the IEC website.

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

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INTRODUCTION

The goal of this document is to provide a fully interoperable network video recording and reply implementation comprised of products from different vendors. This document describes the network video recording model, interfaces, data types and data exchange patterns. The document reuses existing relevant standards where available, and introduces new specifications only where necessary to support the specific requirements for network video recording and reply.

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VIDEO SURVEILLANCE SYSTEMS FOR USE IN SECURITY APPLICATIONS –

Part 2-32: Recording control and replay based on web services

1 Scope

This part of IEC 62676 specifies the web service interface for the configuration of the recording of video, audio and metadata. Additionally, associated events are defined.

Clause 4 provides a definition of the storage model this document is based on.

Web service usage is outside the scope of this document. Please refer to the IEC 60839-11-31 for more information

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.

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IEC 60839-11-31:2016, *Alarm and electronic security systems – Part 11-31: Electronic access control systems – Core interoperability protocol based on Web Services*

<https://standards.iteh.ai/catalog/standards/sist/78d24b19-b26b-4545-8703-547185e4e2d9/iec-62676-2-32-2019>

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Federal Information Processing Standard (FIPS), FIPS 180-4, *Secure Hash Standard (SHS)* [online]. [viewed 2019-02-28]
Available at <https://csrc.nist.gov/publications/detail/fips/180/4/final>

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1.1

access unit

one or more frames or samples of audio, video, or metadata, which are contained in a group of RTP packets having the same presentation time

3.1.2

certificate

data which binds a public key to a subject entity

Note 1 to entry: The certificate is digitally signed by the certificate issuer to allow for verifying its authenticity.

3.1.3

metadata

streaming data except video and audio, including video analytics results, PTZ position data and other metadata (such as textual data from POS applications)

3.1.4

recording

container for a set of audio, video and metadata tracks

Note 1 to entry: A recording can hold one or more tracks. A track is viewed as an infinite timeline that holds data at certain times.

3.1.5

recording event

event associated with a recording, represented by a notification message in the APIs

3.1.6**recording job**

job that performs the transfer of data from a data source to a particular recording using a particular configuration

3.1.7**signature**

digital signature

digital signature scheme

mathematical scheme for demonstrating the authenticity of a digital message or document

3.1.8**track**

individual data channel consisting of video, audio, or metadata

Note 1 to entry: This definition is consistent with the definition of "track" in IETF RFC 2326.

3.1.9**video analytics**

algorithms or programs used to analyse video data and to generate data describing object location and behaviour

3.2 Abbreviated terms

CCTV closed-circuit television

JPEG Joint Photographic Expert Group

PTZ pan tilt zoom

RTCP RTP control protocol

RTP real-time transport protocol

RTSP real time streaming protocol

SDP session description protocol

SHA secure hashing algorithm

TCP transmission control protocol

UDP user datagram protocol

UTC coordinated universal time

UTF Unicode Transformation Format

WSDL web service description language

4 Overview**4.1 Interfaces**

This document provides a set of interfaces that enable the support of interoperable network storage devices, such as network video recorders, digital video recorders and cameras with embedded storage.

The following functions are supported:

- recording control;
- search;
- replay control.

These functions are provided by three interrelated services:

Recording control service enables a client to manage recordings, and to configure the transfer of data from data sources to recordings. Managing recordings includes creation and deletion of recordings and tracks. The WSDL for this service is specified in Clause B.1

Search service enables a client to find information about the recordings on the storage device, for example to construct a "timeline" view, and to find data of interest within a set of recordings. The latter is achieved by searching for events that are included in the metadata track recording. The WSDL for this service is specified in Clause B.2

Replay control service enables a client to play back recorded data, including video, audio and metadata. Functions are provided to start and stop playback and to change speed and direction of the replayed stream. It also enables a client to download data from the storage device so that export functionality can be provided. The WSDL for this service is specified in Clause B.3

This document also includes specification for:

- playback of recorded data;
- export file format;
- a receiver that acts as a RTSP client endpoint. The WSDL for this service is specified in Clause B.4.

Table 1 lists the prefix and namespaces used in this specification. For interfaces defined by this document, the respective annex is provided. Listed prefixes are not part of this document and an implementation can use any prefix.

Table 1 – Referenced namespaces (with prefix)

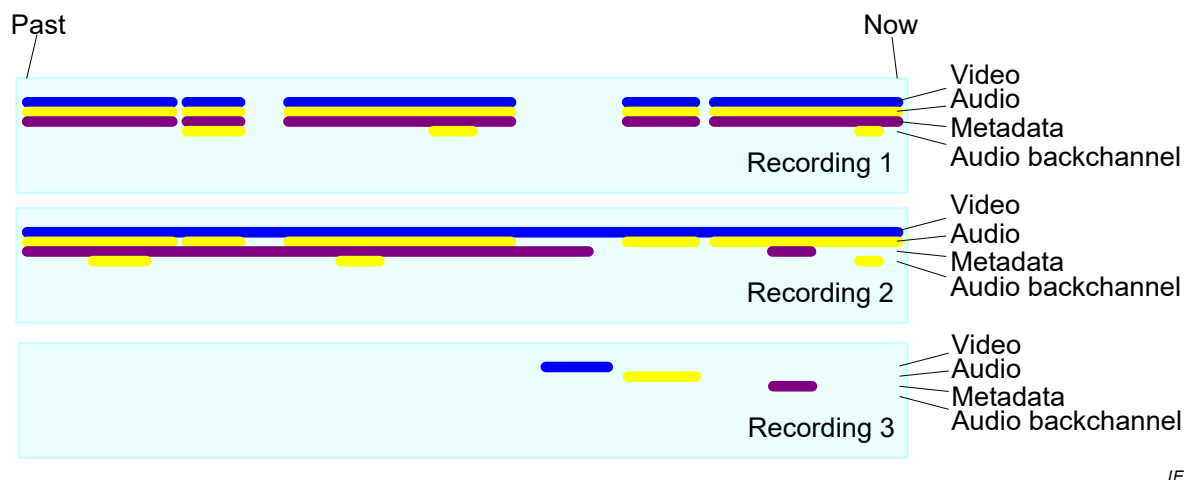
Prefix	Namespace URI	Reference
env	http://www.w3.org/2003/05/soap-envelope	W3C SOAP12-PART1
ter	http://www.onvif.org/ver10/error	IEC 60839-11-31
trc	http://www.onvif.org/ver10/recording/wsdl	Clause B.1
trp	http://www.onvif.org/ver10/replay/wsdl	Clause B.3
trv	http://www.onvif.org/ver10/receiver/wsdl	Clause B.4
tse	http://www.onvif.org/ver10/search/wsdl	Clause B.2
tt	http://www.onvif.org/ver10/schema	Clause B.5
xs	http://www.w3.org/2001/XMLSchema	W3C XML-Schema-1 W3C XML-Schema-2

4.2 Storage model

The storage interfaces in this document present a logical view of the data on the storage device. This view is completely independent of the way data might be physically stored on the disk.

The key concept in the storage model is that of a recording. The term recording is used in this specification to denote a container for a set of related audio, video and metadata tracks, typically from the same data source, for example a camera. A recording could hold any number of tracks. A track is viewed as an infinite timeline that holds data at certain times.

At a minimum, a recording is capable of holding three tracks, one for audio, one for video and one for metadata. Some implementations of the recording service can support multiple tracks of each type. For example, the same recording could hold two video tracks, one containing a low-resolution or low-frame-rate stream and one containing a high-resolution or high-frame-rate stream; see Figure 1.



IEC

Figure 1 – Storage model with tracks

It is important to note that the storage interfaces do not expose the internal storage structures on the device. In particular, a recording is not intended to represent a single file on disk, although, in many storage device implementations, a recording is physically stored in a series of files. For instance, some camera implementations realise alarm recording by creating a distinct file for each alarm that occurs. Although each file could be represented as a different recording, the intent of the model in this document is that all these files are aggregated into a single recording.

Within a recording the regions where data is actually recorded are represented by pairs of events, where each pair comprises an event when recording started and an event when recording stopped. A client can construct the logical view of the recordings by using the FindRecordings and FindEvents methods of the search service.

If metadata is recorded, the metadata track can hold all the events generated by the data source, see Clause 10 of IEC 60839-11-31:2016 and 6.3.8 of IEC 62676-2-31:2019. In addition, a device also conceptually records historical events as defined by this document (see 6.17). This includes information such as the start and end of a recorded data range. A device can also conceptually record vendor specific historical events. Events generated by the device are not inserted in existing metadata tracks of recordings. The FindEvents method in the search service can find all the recorded events.

4.3 Recording control

The recording service enables a client to manage recordings, and to configure the transfer of data from data sources to recordings. Managing recordings includes the creation and deletion of recordings and tracks.

Recording jobs transfer data from a recording source to a recording. A recording source can be a receiver object created with the receiver service, or it can be a media profile that encodes data on a local device. The media profile could be used as a source on a camera with embedded storage.

To save data to a recording, a client first creates a recording and ensures that the recording has the necessary tracks. Then the client creates a recording job that pulls data from one or more sources and stores the data to the tracks in the recording.