TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 15448

December 2014

ICS 03.240; 35.240.60

Supersedes CEN/TS 15448:2006

English Version

Postal services - Open standard interface between image controller and enrichment devices (OCRs, video coding systems, voting systems)

Services postaux - Interface standard ouverte entre le contrôleur d'images et les dispositifs enrichis (OCR, systèmes d'encodage vidéo, systèmes de votes)

Postalische Dienstleistungen - Offene Normschnittstelle zwischen Bildbearbeitung und Anreicherungsgeräten (OCR, Videocodierungssysteme, Abstimmungssysteme)

This Technical Specification (CEN/TS) was approved by CEN on 15 March 2014 for provisional application.

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Ref. No. CEN/TS 15448:2014 E

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Foreword

This document (CEN/TS 15448:2014) has been prepared by Technical Committee CEN/TC 331 “Postal services”, the secretariat of which is held by NEN.

The document supersedes CEN/TS 15448:2006.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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Introduction

There is a growing demand on the postal operators to combine parts of their sorting automation equipment from different suppliers to optimize performance. In the past this has led to project specific interfaces being negotiated between one postal operator and one or multiple suppliers. These project-specific interfaces were developed by the suppliers and maintained for an agreed period of time. This approach has several disadvantages:

— The interface is derived from an interface that was not intended to be open,

— The interface is developed for a single project and works only in the context of that project (extra costs),

— Each participating supplier has to implement the interface (multiple effort),

— Experience shows that integration of components with project-specific interfaces is complex and expensive,

— Project-specific interfaces are not integrated into the product line and once the initially agreed maintenance period is over it may be difficult and expensive to maintain and/or may hinder the adoption of equipment upgrades.

This has led to “open interfaces” defined by one supplier. These still have the disadvantage of being in product use by only one supplier.

Within a group of postal operators and suppliers it was decided to develop a set of “open standard interfaces” which will be developed by the suppliers and referred to by the postal operators. The benefits of these interfaces are expected to be that they:

— are fixed in an international standard (with change control);

— are agreed and implemented by major suppliers;

— are agreed by customers and therefore used in calls for tenders;

— will result in net savings with the high initial development effort and consequent higher basic equipment prices being more than offset by reduced project development, integration and maintenance costs;

— will minimize the need for project integration effort by reducing implementation timescales;

— will increase competition between suppliers by stimulating product improvements.

This document covers the interface between an image controller and so called enrichment devices (OCR, Video Coding System or Voting System).

The communication partners of this interface will be called Image Controller (IC) on the one side and Enrichment Device (ED) on the other side.

Other work items (subject to agreement of CEN/TC331 and the UPU Standards Board) will be defined to cover other areas as and when the need is identified and the resources for development become available. A separate project group for each interface will undertake the work.

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1 Scope

The purpose of this Technical Specification is to define the requirements of the OCR/VCS Standard interface and to convey these requirements in context to the reader.

This document is arranged under 4 main clauses as described in Figure 1:

— UCM (Use Case Model) describes the use cases for the IC/ED Interface using sequence diagrams with messages.

— IDD (Interface Design Description) defines the data model for the IC/ED interface.

— SDD (System Design Description) defines the mandatory specification of the IC/ED interface in terms of architecture, services and behavioural models. In the Common Part of this clause no middleware or transport layer is specified. The common part of this clause is intended to be middleware-independent.

— SDD-TCP/IP, SDD-CORBA, in these specialized clauses. The specifications for 2 compatible transport solutions TCP/IP, CORBA are provided. Further middleware solutions (such as SOAP) can be added when available, provided that they are fully compatible with the Common Part.

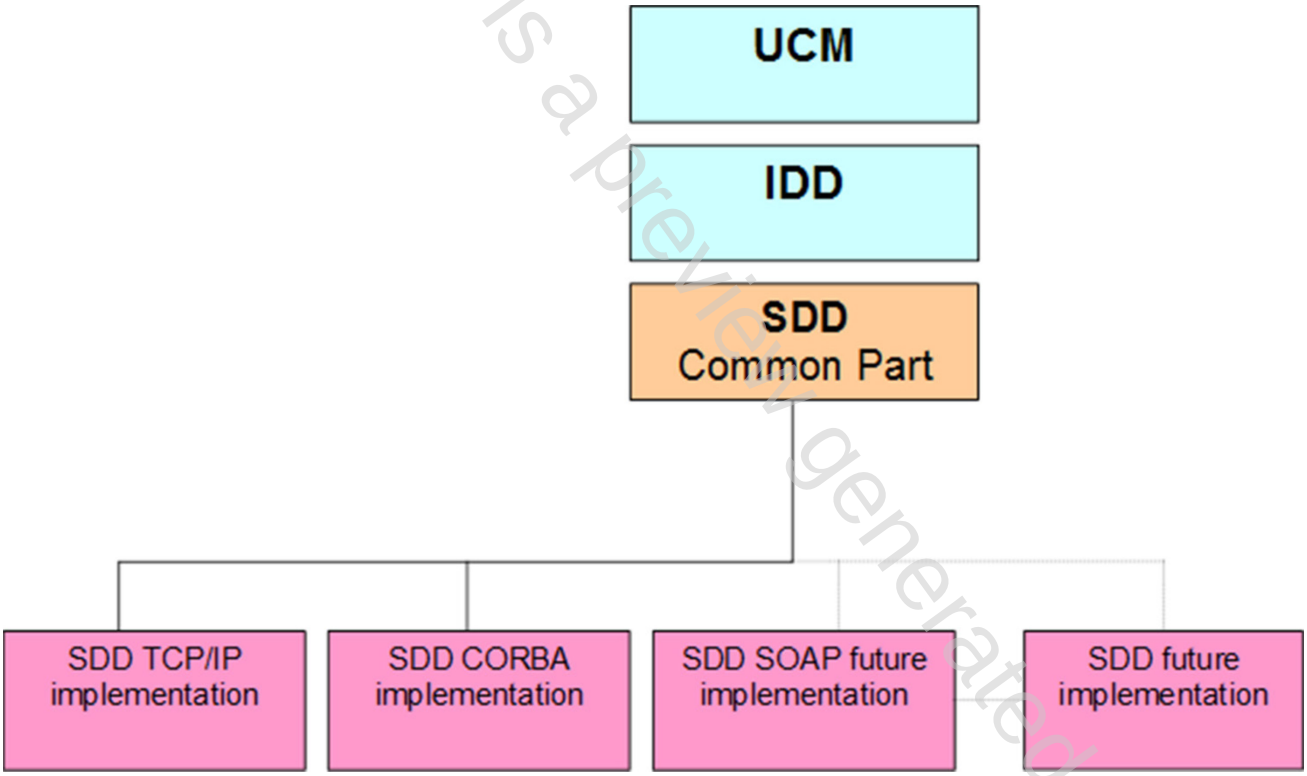

Figure 1 — IC/ED Interface Document Structure

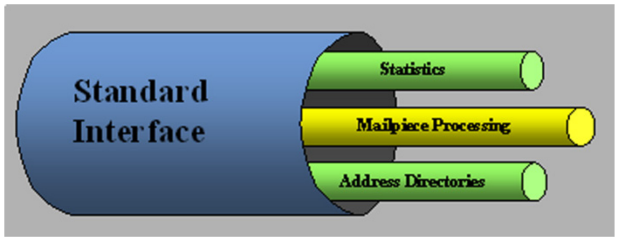

Figure 2 — Interface environment of an Enrichment Device

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As shown on Figure 2, there are many interfaces from an Enrichment Device to the rest of the system. This document is only concerned with the **Mailpiece Processing** part of the complete Standard Interface.

The mailpiece processing is concerned with the passing of a mailpiece to an Enrichment Device for processing.

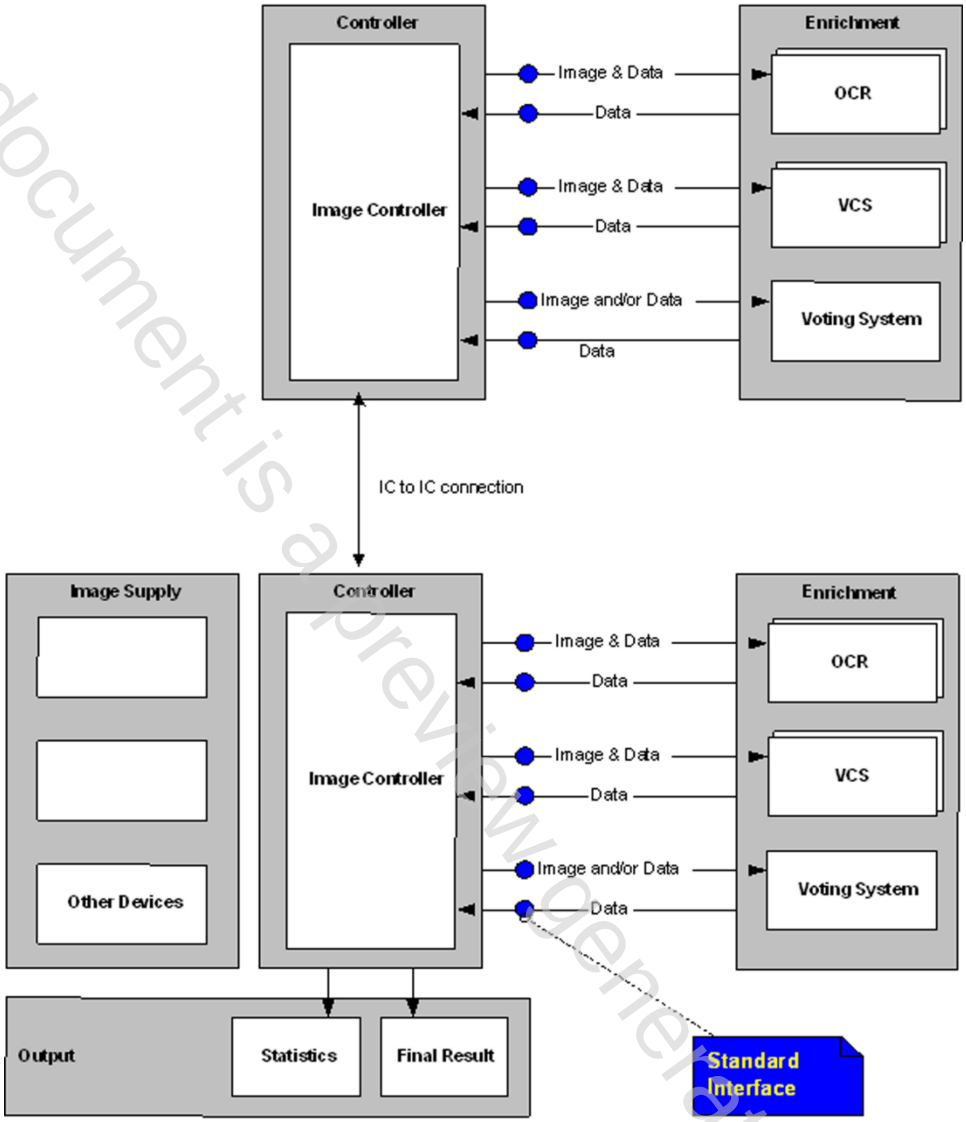

Figure 3 — System model

Figure 3 depicts the system model of an Enrichment Device. As visible on the figure, an Enrichment Device is one of:

— an OCR:

a single or a pool of automatic recognition and interpretation engines, which are capable of retrieving information from an image of a mailpiece without human intervention;

— a VCS:

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a single or a pool of video coding desks, which produce results from images of mailpieces; all tasks related to the management of the coders and the coding desks are encapsulated within the VCS system, or are accessible via interfaces which are outside the scope of the interface described within this document;

— a Voter:

a system which can determine the most appropriate result for a mailpiece using data and/or an image of a mailpiece; typically, a voter determines the most appropriate result from two or more results.

This document therefore covers the **Mailpiece Processing** interface between the **Image Controller** and the **Enrichment Devices**.

The document describes the requirements in the case of **real-time enrichment**: operational mode of an Enrichment Device, where the ED replies within the specified expiration time to the IC; the IC has to keep track of all mailpieces waiting for a reply from an ED. The ED does not keep persistence of mailpieces outside a channel connection with the IC. The ED has to have the processing power available to enrich a mailpiece. There is one and only one response for a mailpiece.

A later version of the document shall describe the case of **deferred enrichment**: operational mode of an Enrichment Device, where the ED may pre-request mailpieces from the IC. The ED has to keep persistence of the mailpiece to enrich it later and keep the result available for a result request from the IC. There is no response expected by IC from the ED.

The interface between Image Controller and Image Controller is NOT part of this document.

Furthermore, there may be many IC connected to many ED's, as shown in the following object model:

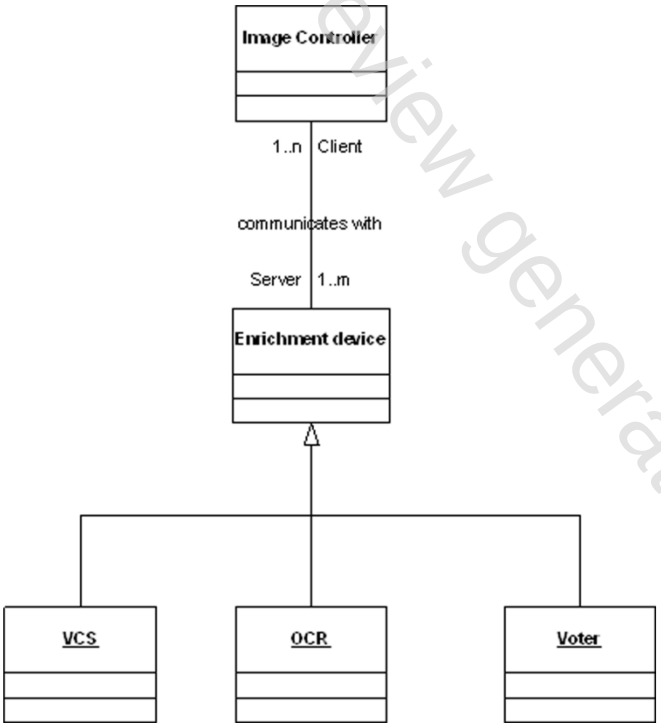

Figure 4 — Communication relationship between IC and ED

The submission strategy in case of one IC connected to many ED's is not part of the interface. It is for optimizing the mail flow in case of identical ED's, or for defining the order in which different ED's are activated (cascaded versus parallel submission).

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The submission strategy of the IC shall be part of the specification and certification of the IC, which is not part of this document.

2 Normative references

Not applicable.

3 Terms and definitions

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

3.1
actor
coherent set of roles those users of uses cases play when interacting with these use cases.

Note 1 to entry: An actor has one role for each use case with which it communicates. See [UML].

3.2
attributes
non-image information related to a mailpiece

3.3
coding desk
computer or terminal equipped with a software to display images of mailpieces, and designed for a human operator (video coder) to enter information about the mailpiece

3.4
component
software unit with a defined interface; might contain other components

3.5
data element
simple data type

3.6
data object
assembly of elements [1..*] and/or other data objects; recursive type

3.7
enrichment
process of generating new information about a mailpiece

Note 1 to entry: Any information about the mailpiece may be used in this process, such as the image, image information or result data. However, the use of an image is not compulsory.

3.8
enrichment device
ED
system designed to enrich information about mailpieces

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