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English Version

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

Services postaux - Interface de standard ouvert entre un contrôleur d'images et un dispositif d'enrichissement (lecteur optique de caractères, vidéocodage, voteur)

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

This Technical Specification (CEN/TS) was approved by CEN on 3 July 2006 for provisional application.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Contents

Page

Foreword 4
Introduction 5
1 Scope 6
2 Normative references 9
3 Terms and definitions 9
4 Symbols and abbreviations 11
5 The use case model 11
6 Overall Description 12
6.1 Use-Case Model Survey 12
6.1.1 Connection Use Case Model 12
6.1.2 Channel Use Case Model 14
6.2 Assumptions and Dependencies 15
6.2.1 Image supply 15
6.2.2 Control 15
6.2.3 Output 15
6.2.4 Enrichment 15
6.2.5 Data Representation 15
6.2.6 Image Representation 16
6.2.7 Channel Concept 17
6.2.8 Client/server model 19
6.2.9 Naming Service 19
6.2.10 Connection Sequence 19
6.2.11 Flow Control Model 20
7 Specific Requirements 22
7.1 Use-Case Reports 22
7.1.1 UC001 - Publish Presence 22
7.1.2 UC002 - Connect 25
7.1.3 UC003 – Disconnect 32
7.1.4 UC004 – Open Channel 35
7.1.5 UC006 – Get Enrichment Device Status 37
7.1.6 UC101 – Close Channel 39
7.1.7 UC102 – Control Flow 43
7.1.8 UC103 – Request Channel Status 46
7.1.9 UC104 - Submit Mailpiece 48
7.1.10 UC105 – Transmit Result 50
7.2 Supplementary Requirements 52
7.3 Rejections 53
Discarded Use Cases 53
Annex A (normative) SDD 54
A.1 Purpose 54
A.2 Scope 54
A.3 Overview 54
A.4 Architectural Goals and Constraints 54
A.4.1 Client Server Model 54
A.4.2 Client / Servant Relationships 54
A.4.3 CORBA Naming Service 58
A.5 Class Model 60
A.5.1 Overview 60
A.5.2 Interface: IEnrichmentDevice 62

This document is a preview generated by EVS

A.5.3 Interface: IImageController 65
A.5.4 Interface: IEDChannel 66
A.5.5 Method: requestChannelState() 67
A.5.6 Interface: IICChannel 68
A.5.7 Data definition 70
A.6 Behavioural Model 75
A.6.1 Connect 75
A.6.2 Disconnect 86
A.6.3 Open Channel 93
A.6.4 Close Channel 96
A.6.5 Control Flow 98

Annex B (normative) IDD 107
B.1 Purpose 107
B.2 Scope of IDD 108
B.3 Prerequisites 108
B.4 Overview 108
B.5 Section A – TIFF Definition 109
B.5.1 Tiff Usage 109
B.6 Section B – Mailpiece Data Definition 114
B.6.1 Requirements 114
B.6.2 Model Commitments 119
B.6.3 Domain Data Model & Types 121

Annex C (Informative) 179
C.1 Introduction to XML 179
C.1.1 XML Document Structure 179
C.1.2 Introduction to XML Schema 180
C.2 XML Schemas 182
C.2.1 Domain Instance Types 182
C.2.2 Base Types 183
C.2.3 Generic Types 191
C.2.4 Primitives 193
C.2.5 Example of a Customer specific Schema Definition 197
C.3 The XML Instance Document 201
C.3.1 Type Assignment in the Instance Document 201
C.3.2 Examples 201

Bibliography 213

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Foreword

This document (CEN/TS 15448:2006) has been prepared by Technical Committee CEN/TC 331 “Postal Services”, the secretariat of which is held by NEN in collaboration with UPU.

NOTE This document has been prepared by experts coming from CEN/TC 331 and UPU, under the frame of the Memorandum of Understanding between UPU and CEN.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this CEN Technical Specification :Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and 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 optimise 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 standard covers the interface between an image controller and so called enrichment devices (OCR, Video Coding System or Voting System).

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 document is to define the requirements of the OCR/VCS Standard interface and to convey these requirements in context to the reader.

The interface specification is contained in the two appendices of this document, both of them normative:

- System Design Description (SDD)
  This document specifies the class model, dynamic behaviour and exception handling of the interface. The API is included.

- Interface Design Document (IDD)
  The IDD in Annex B defines the "payload" information for the interface. That is the data which is required for processing a mailpiece e.g. TIFF image format and XML data.

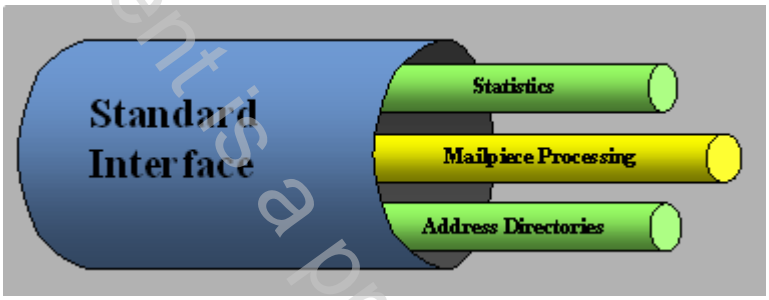

Figure 1 – Interface environment of an Enrichment Device

As shown on Figure 1, 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.

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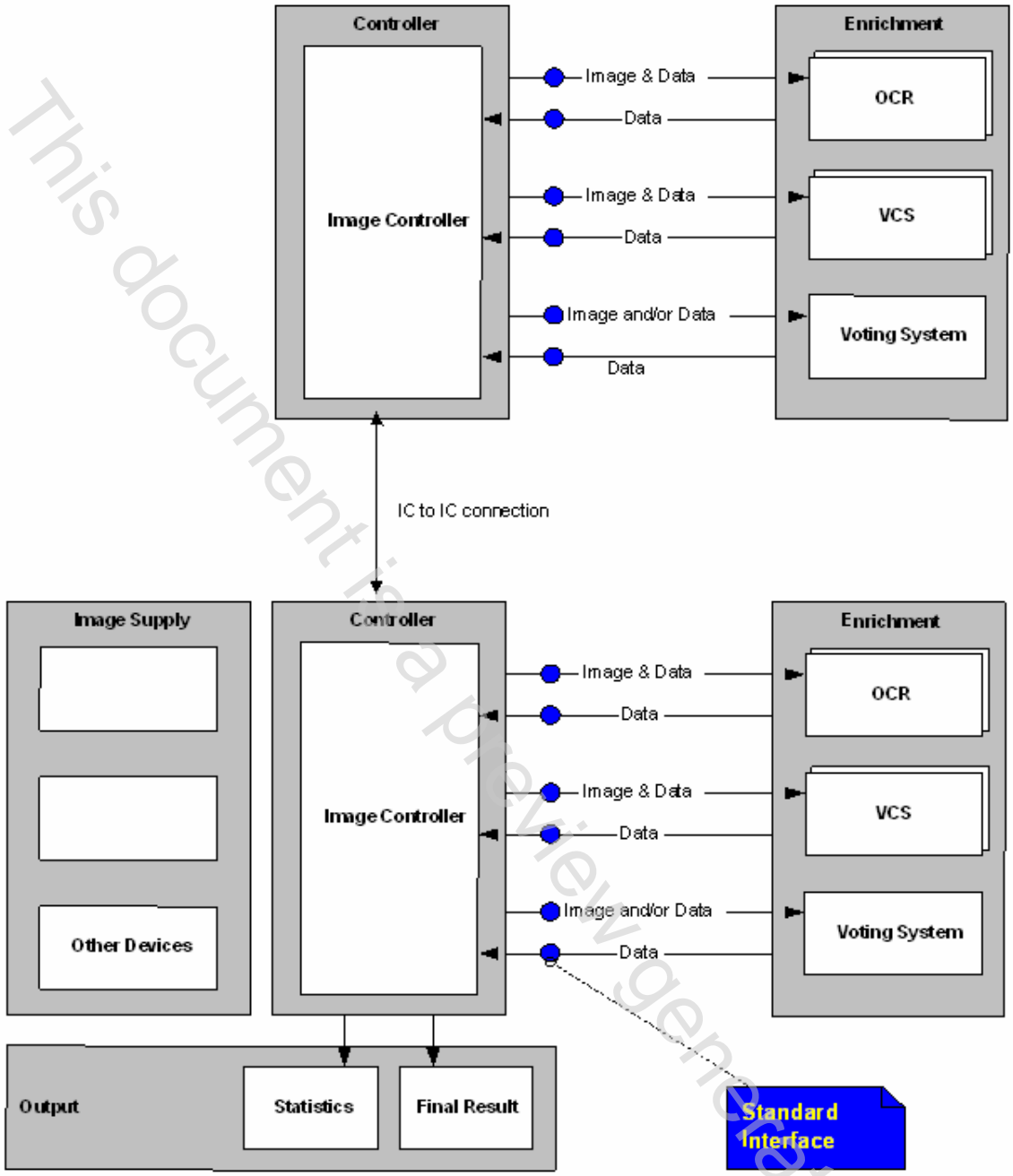

Figure 2 – System model

Figure 2 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**
  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.

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- **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:

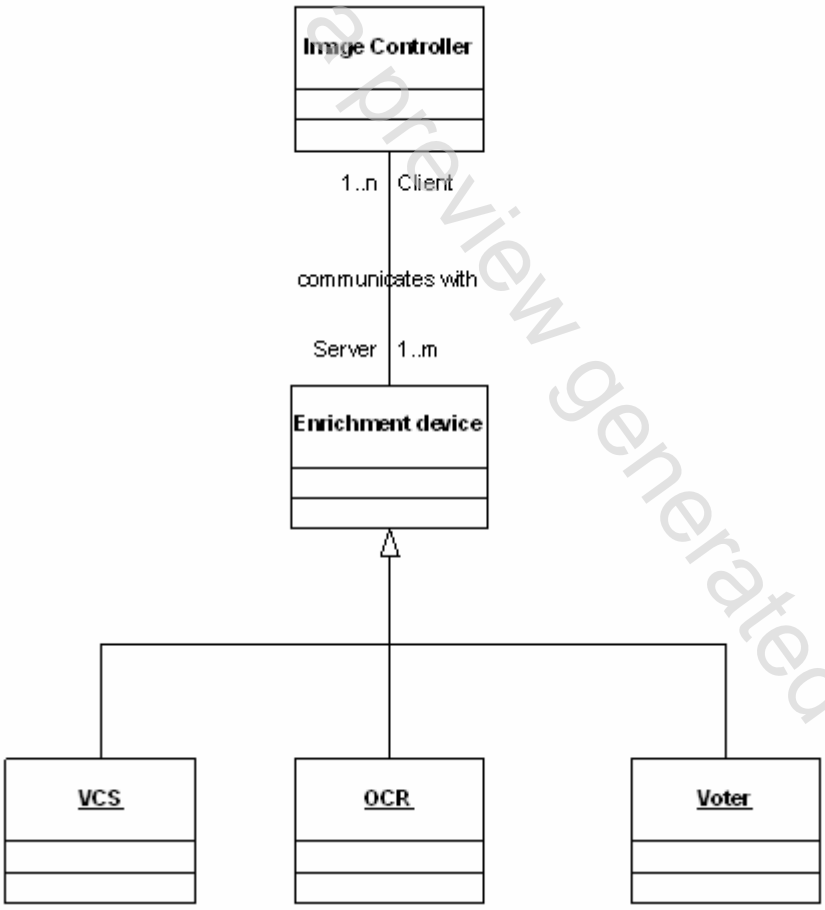

Figure 3 – Communication relationship between IC and ED

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

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

The following referenced documents are indispensable for the application of this document. For dated references, or references to a version number, only the edition cited applies. For undated references and where there is no reference to a version number, the latest edition of the referenced document (including any amendments) applies.

UPU S42[1)], *International Postal Address Components and Templates*

3 Terms and definitions

3.1
Actor
Coherent set of roles those users of uses cases play when interacting with these use cases. An actor has one role for each use case with which it communicates. See [UML]

3.2
Attributes
All 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 Any information about the mailpiece may be used in this process, such as the image, image information or result data. The use of an image however, is not compulsory

3.8
Enrichment device
System designed to enrich information about mailpieces

1) UPU Standards are obtainable from the UPU International Bureau, whose contact details are given in the Bibliography; the UPU Standards glossary is freely accessible on URL http://www.upu.int.

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