SLOVENSKI STANDARD
SIST-TS CEN/TS 15448:2015

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Nadomešča:
SIST-TS CEN/TS 15448:2007
SIST-TS CEN/TS 15448:2007/AC:2009

Poštne storitve - Odprti standardni vmesnik med obdelovalnikom slike in napravami za obogatitev (optično prepoznavanje znakov (OCR), sistemi za videokodiranje, glasovalni sistemi)

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

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

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

Ta slovenski standard je istoveten z: CEN/TS 15448:2014

ICS:

03.240	Poštne storitve	Postal services
35.240.69	Uporabniške rešitve IT pri poštnih storitvah	IT applications in postal services

SIST-TS CEN/TS 15448:2015   **en**

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TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

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CEN/TS 15448

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English Version

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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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.

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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.
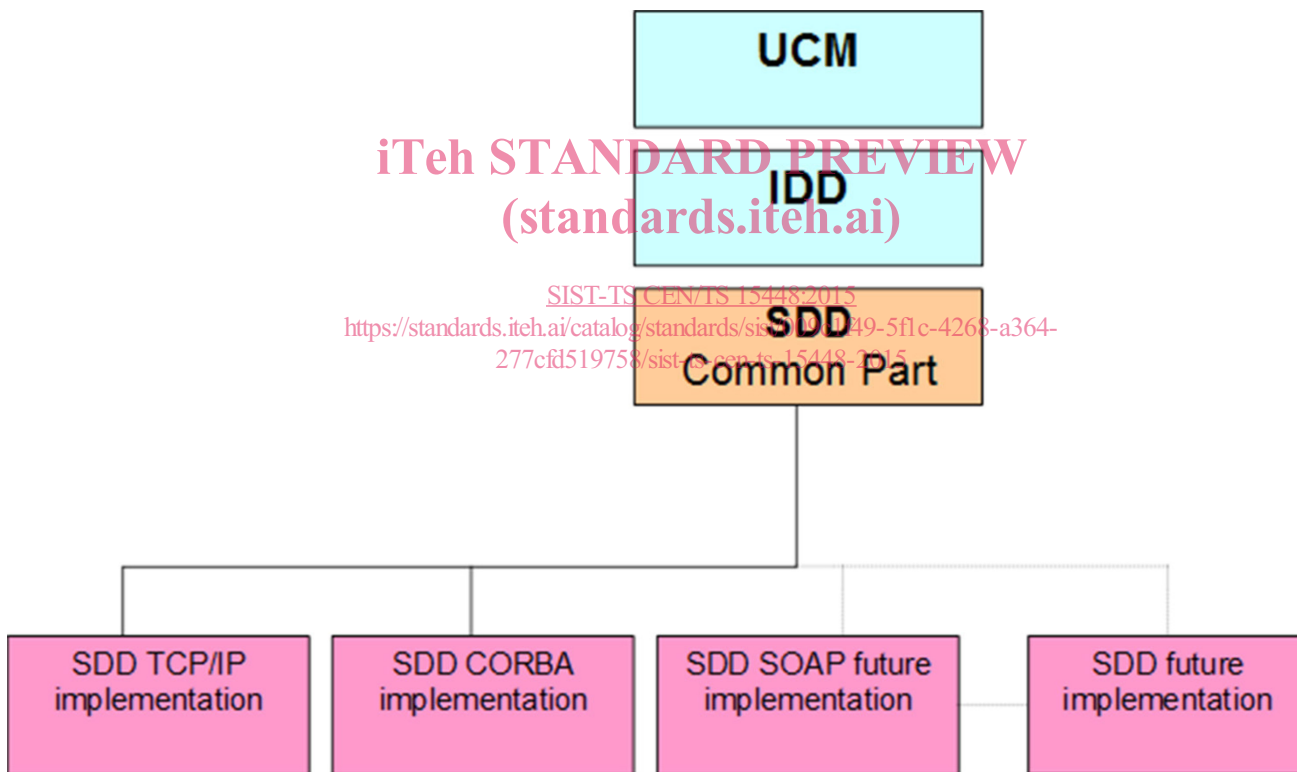
Figure 1 — IC/ED Interface Document Structure
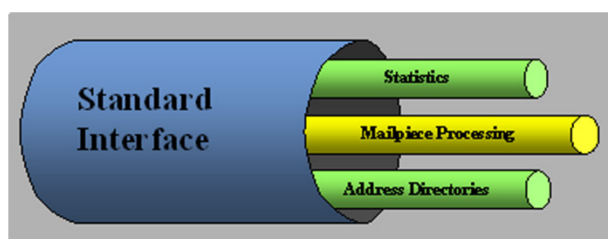
Figure 2 — Interface environment of an Enrichment Device

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.
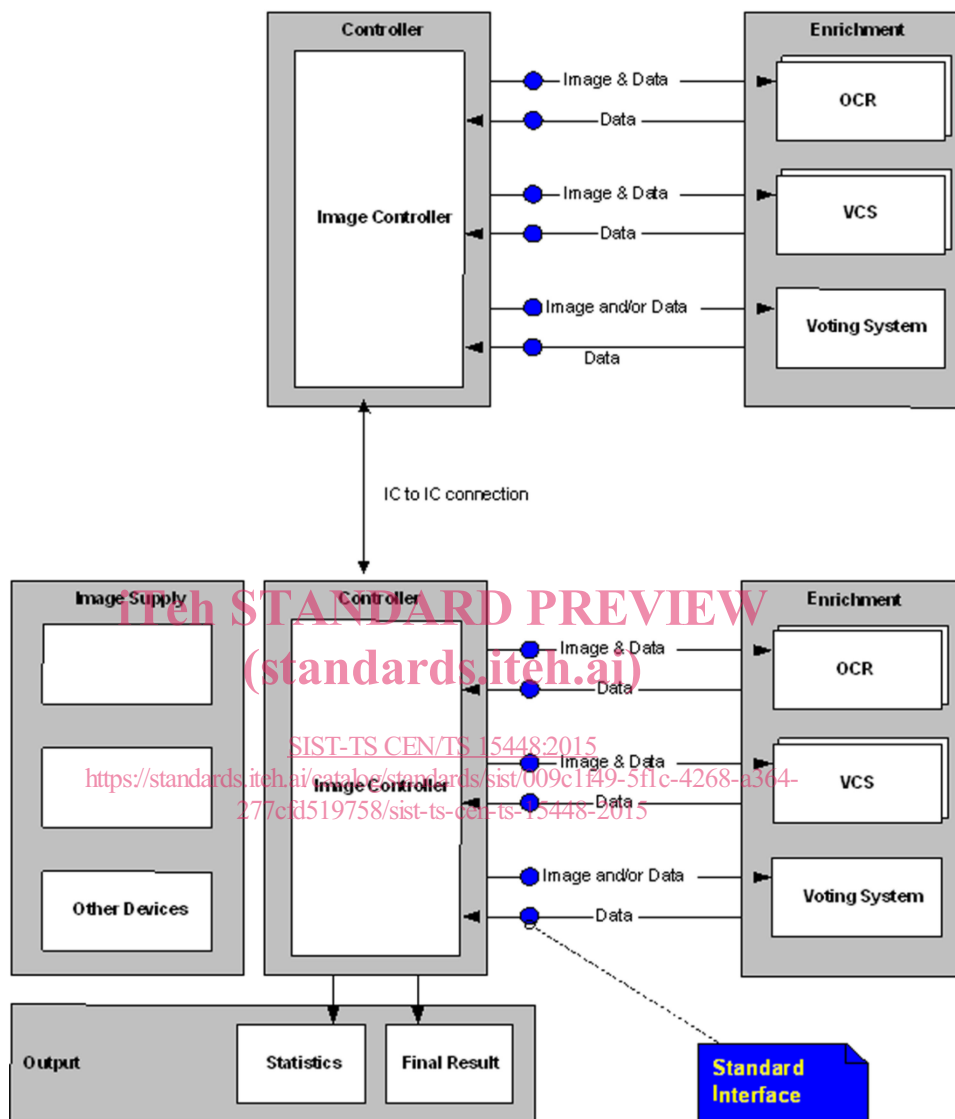
Figure 3 — System model

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:
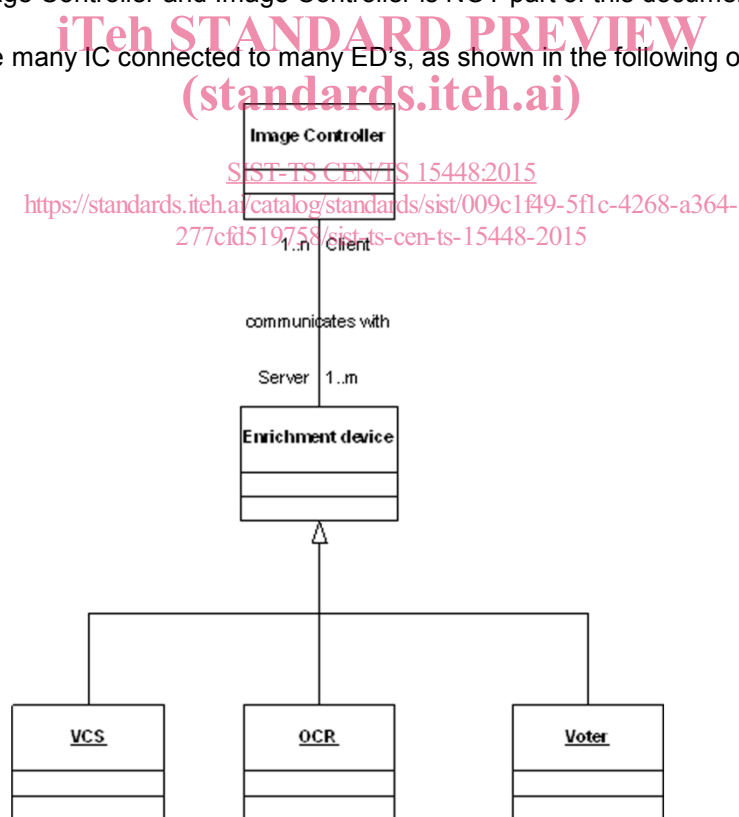
Figure 4 — Communication relationship between IC and ED

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).

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

3.9
flow control
principle of sending images of mailpieces from an IC to an ED: either on request of the ED ("request" mode), or at a pace defined by the IC, with emission suspended/resumed on request by the ED

3.10
image
data acquired by the Image Supply and stored as part of the mailpiece

3.11
image controller
IC
system designed to handle the flow of images and data issued by the Image Supplies and sent to the Enrichment Devices

Note 1 to entry: The Image Controller also controls the results from image enrichment.

3.12
infrastructure data
basic information, such as identification references which an Image Controller and Enrichment Device require in order to communicate effectively

EXAMPLE Letter ID, Submission ID.

3.13
mail object
letter, Flat, Parcel, Postcard etc.

3.14
mailpiece
information stored about a single physical mail item (letter, flat or parcel) in an IC

3.15
mailpiece data
information which describes attributes of the physical mailpiece which is used to aid and is a product of enrichment

EXAMPLE Mailpiece width & height, indicia information, address location, city name, sort code, etc.

3.16
offline
operational mode of a sorting machine, in which some processing of mail is done after the mail has been conveyed in the machine; there is a need for printing an ID-tag, to identify the mail for which a 2nd sorting pass is required

3.17
online
operational mode of a sorting machine, implying all the processing of mail is done while the mail is conveyed in the machine; there is no need for printing an ID-tag

3.18
permanent Error
fatal error as indicated by the middleware or application layer.

Note 1 to entry: A non-fatal error may be considered to be a permanent error after repeated remedial handling.

3.19
result
outcome of enrichment

3.20
street
street keying (street name and/or house number in street)

3.21
system
components and relationships between these (interfaces, communication)

3.22
voter
system which can determine the most appropriate result for a mailpiece using data and/or an image of a mailpiece

4   Symbols and abbreviations

ED	Enrichment Device
GUI	Graphical User Interface
IC	Image Controller
ID	Identifier
IDD	Interface Design Description
OCR	Optical Character Recognition
PC	Post code
PM	Project Manager
ROI	Region Of Interest
SDD	System Design Description
UCM	Use Case Model
VCS	Video Coding System
W3C	World Wide Web Consortium
XML	eXtendable Markup Language
CORBA	Common Object Request Broker
TCP/IP	Transmission Control Protocol/Internet Protocol
SOAP	Simple Object Access Protocol

5   The Use Case Model (UCM)

5.1   General

The **Use Case Model** (UCM) defines the requirements of the CEN OCR/VCS Standard interface. The document utilizes UML use cases and other modelling techniques as well as textual information to convey the requirements.

This clause contains the following sections:

— Overall Description:

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the use case model for the installation is described;

— Specific Requirements:

the use cases are described in detail including all supplementary requirements.

5.2 Overall Description

5.2.1 General

Unified Modelling Language has been used to describe the use case model. Details of UML can be found in [UML_OES], [UML_ALH] and [UML].

5.2.2 Use-Case Model Survey

5.2.2.1 General

The Use Case Model is separated into two groups of use cases: those which are relevant for the connection to an Enrichment Device system, and those which are relevant for managing and using a channel.

5.2.2.2 Connection Use Case Model

5.2.2.2.1 General

The connection use cases (Figure 5) apply to the Enrichment Device as a complete component. They enable a connection to be established and channels to be opened as well as the status exchange of the complete Enrichment Device.
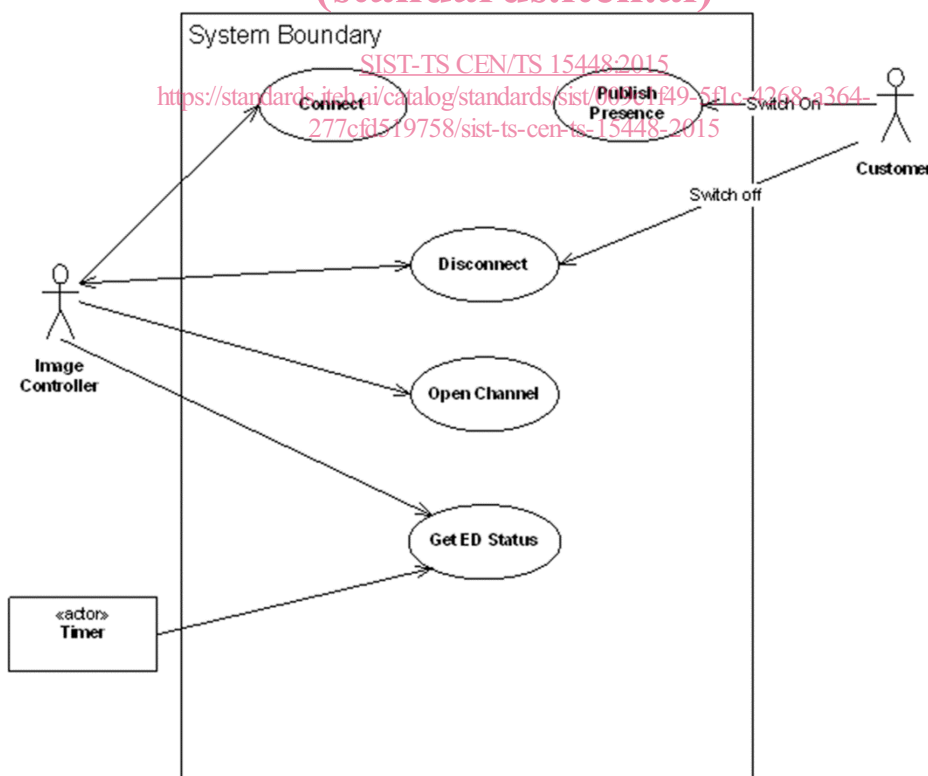
Figure 5 — Connection use cases

5.2.2.2.2   Actors

Name	Description
Image Controller	Software: The Image Controller is a complete software system which is possibly made up of many software components deployed on multiple hardware nodes. The IC is responsible for distributing images from the image sources to the Enrichment Devices and handling the results which are generated. The IC is responsible for the strategy for distributing the images.
Customer	Human: The Customer actor is a human who is able to start and stop the components.
Timer	Software: A timer which triggers events at defined intervals.

5.2.2.2.3   Use Cases

ID	Name	Description
UC001	Publish Presence	The Enrichment Device presents is presence to the Image Controller when it is switched on. Following strict client-server rules, the ED (the server) is passive and is connected-to by an IC (client).
UC002	Connect	The IC detects an ED which it wishes to utilize for processing mailpieces. It connects to the ED in order to use the processing capabilities of the ED. During the connection, the capabilities of the ED are exchanged with the IC.
UC003	Disconnect	A disconnect is bi-directional. A disconnect implies closing any opened channel within the connection.
UC004	Open Channel	The Image Controller opens a coding channel. A channel defines the subset of the published capabilities The flow control is related to a channel.
~~UC005~~	~~Put ED Status~~	~~The ED indicates to the IC any relevant data about its status~~[1]
UC006	Get ED Status	The IC needs to know the global status of ED: to be able to go further in the transactions to display the status of the ED on the IC's GUI

5.2.2.3   Channel Use Case Model

5.2.2.3.1   General

These use cases (Figure 6) apply to a channel which has been previously opened. They allow the closing of a channel, the processing of mailpieces and the exchange of the channel status.

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[1] Deleted: This use case describes a message and not a use case. Remove this UC because the aims of the message can be covered by a) ED disconnects from IC is covered in UC - Disconnect. B) The need for the ED to know if the IC is present, can be fulfilled by checking if "Get ED Status" is executed or by observing its channels.