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Poštne storitve - Odprti vmesniki - Sortirni načrt

Postal services - Open interface - Sortplan

Postalische Dienstleistungen - Offene Schnittstelle - Sortierplan

Services postaux - Interface ouverte - Plan de tri

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Contents

Page

Foreword 3

Introduction 4

1 Scope 5

2 Normative references 5

3 Terms and definitions 5

4 Format 6

5 Definition of sort plan concepts 6
5.1 Sort plan concepts general 6
5.2 Definition of SortingProducts 6
5.2.1 Item related 6
5.2.2 Machine related 7
5.3 Definition of Cards 7
5.4 Definition of Actions 7
5.4.1 Sort to outlets 7
5.4.2 Sequence mail 7
5.4.3 Print on label 8
5.4.4 Show on display 8
5.4.5 Print on mail item 8
5.4.6 Sweep 8

6 Structure of the sort plan file 8
6.1 Sort Plan 8
6.1.1 General 8
6.1.2 Flag 9
6.1.3 MailAttribute 10
6.1.4 Card 10
6.1.5 SortingProduct 11
6.1.6 Destination 11
6.1.7 CardRequest 12
6.1.8 SpecialSort 12
6.2 OutletGroup 12
6.3 SweepGroup 13
6.4 Action 14
6.4.1 General considerations 14
6.4.2 Sort 14
6.4.3 Print 15
6.4.4 Sweep 15

7 Precedence rules 15
7.1 General considerations 15
7.2 Sorting Product 16
7.3 Action 16

8 Implementation chart 16

Annex A (informative) XML data 17
A.1 XML data structure 17
A.2 Example of Destination Sort Plan 29
A.3 Example of Sequence Sort Plan 30

Foreword

This document (CEN/TS 16316:2012) has been prepared by Technical Committee CEN/TC 331 “Postal Services”, the secretariat of which is held by NEN.

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Introduction

In a very generic postal system architecture, an Information System manages the creation, production and life cycle of sort plans. This Information System is also responsible for distributing sort plans to Sorting Machines. Sorting machines use several configuration files. A sort plan is a kind of configuration file dedicated to the description of sorting operations executed by a sorting machine. Sorting operations are mainly the assignment of mail items to physical outlets, the display text and the tray labels. As both, the Information System and the several types of Sorting Machines, have to interpret this sort plan file. This file format therefore is the interface between them.

In order to optimise performance, there is a growing demand of the postal operators to combine parts of their sorting automation equipment from different suppliers. 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. However, 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 efforts);

— 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. Yet these still have the disadvantage of being in product use only by 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. It was explained that the benefits of these interfaces will 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, higher 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 technical specification is based on the "Common Sortplan Format" which was used in projects before this standard was developed.

1 Scope

This Technical Specification specifies the sort plan file content and structure. It does not deal with other configuration files in sorting machines nor is it applicable to the transport mechanism.

The content of a sort plan allows the specification of the following capabilities:

— sorting by address and non-address attributes;

— sorting of code ranges;

— sorting of rejects;

— support of display and label texts;

— dynamic outlet groups;

— sorting to more than one outlet;

— overflow handling;

— support of cut off time before dispatch;

— sequence sorting;

— provide volume information (option);

— support of Cards;

— possibility to add simple manufacturer specific information;

— support of various sort code formats and non-address attributes;

— support of various display and label formats;

— check against characteristics of the sorting machine.

2 Normative references

There are no normative references for this document.

3 Terms and definitions

3.1
configuration file
one of the different files specifying actions to be processed by a sorting machine during operation time

3.2
configuration file set
complete set of configuration files needed by a machine to operate at a given time

3.3
cut off time
time to empty a certain outlet of a machine for dispatch

3.4
dispatch time
time when the transport leaves the sorting centre

3.5
dynamic outlet groups
outlets automatically assigned by the Machine Control during processing operation according to a defined set of rules

3.6
outlet
output bin or stacker of a sorting machine

3.7
separation
characterization of a part of the mail flow processed by a machine

3.8
sort plan
configuration file specifying sort operations, that is, the assignment of mail items to outlets

4 Format

The sort plans are exchanged as Unicode text files, and are therefore printable: Unicode 16 bits is used. As a deviation, the Unicode 32 bits could be used if necessary. The encoding used is the UTF 8 standard.

The XML language is used to describe the content of a sort plan. As such, a sort plan can be validated against a formal specification, which can be found in A.1.

5 Definition of sort plan concepts

5.1 Sort plan concepts general

This Clause defines the main concepts of the sort plan; the structural details are given in Clause 6.

The sort plan consists mainly of defining the sorting products (what is sorted), the cards and the actions performed on these sorting products.

5.2 Definition of Sorting Products

5.2.1 Item related

Item related conditions are attached to and travel with the mail item (i.e. they are intrinsic to the mail item). The format supports classifying mail by the following item related attributes:

a) destination;

NOTE Destination is expressed by a sortcode.

b) other item attributes.

EXAMPLE *Priority* or *MailFormat*.

5.2.2 Machine related

Machine related conditions describe events that occur on a machine, but will often not travel with the mail item. These are referred to as special sorts.

EXAMPLE Mechanical reject or overflow.

The format supports building reasonably complex classifications. Please note that in reality classifications are typically built from either item-related or machine-related conditions but not from both.

5.3 Definition of Cards

Cards are typically used to separate the mail in the outlet during sequence sorting. The sort plan supports the following information:

a) definition of a Card;

b) request for a Card at a specific position in the sequence of mail.

5.4 Definition of Actions

5.4.1 Sort to outlets

The most important action is to sort a mail item to a given outlet or a group of outlets. Specifying the destination on the machine comes in two options:

— **Static outlet allocation.** The specified outlet points to a physical outlet on the machine. If more than one outlet is specified, these should all be used for the same classification and effectively just form a “bigger outlet”. The machine can decide if it wants to fill up the outlets of a group one after the other or all at the same time.

— **Dynamic outlet allocation.** This only makes sense when more than one outlet is specified. The machine chooses an outlet for the first mail item of each classification and sorts subsequent mail items of the same classification to the same outlet until the outlet is emptied. In theory, the number of SortingProducts can exceed the number of outlets as long as not all products “occur” at the same time.

A group of outlets may be defined either by enumerating the names of the outlets or by indicating the number of outlets needed in this group.

5.4.2 Sequence mail

Mail can be sequenced using two or more passes. Either a separate sort plan for each pass or a single sort plan that contains enough information so the machine knows what to do in each pass can be used. The latter is the more elegant solution because the machine can make better use of volume information gathered in the first pass.

In order to sequence mail, the sort plan includes the following information:

— the walk position of each destination within its respective postman walk;

— the fact that this mail shall be sequenced (in case not all mail that is fed to this sort plan shall be sequenced);

— optionally volume information, so the machine can allocate enough outlets.

5.4.3 Print on label

Mail bundles are often shipped with a label that is printed on-demand by a label printer. The labels contain Text and often a Barcode.

— **Label layouts.** Sometimes different label layouts requiring different fields are in use. The format allows for the use of different label layouts.

— **Literal content.** Most label fields will contain literal text, i.e. text that shall be printed verbatim or printed as a barcode.

— **Variable content.** Some fields may be populated with keywords that will be evaluated at runtime. A typical example is the current date. This specification does not prescribe the list nor describes the format of such keywords.

5.4.4 Show on display

Displays are treated in basically the same manner as labels except Displays are usually much simpler than Labels. A regular two lines Display will typically accept only a single Format consisting of two lines of text.

5.4.5 Print on mail item

This format has no special support for controlling the printing of barcodes or cancellation bitmaps on mail items. This should be done in separate configuration files.

5.4.6 Sweep

Sometimes outlets need to be emptied at a certain point in time or when other conditions become true. This is referred to either as

— clearance times (sweep at a certain point in time), or

— sweep groups (sweep together with other Sorting Products).

The machine can use this information to either sweep some outlets with a robot or to signal a human operator what outlets to sweep.

6 Structure of the sort plan file

6.1 Sort plan

6.1.1 General

The entire file is a single sort plan. In this clause, the file structure is described in a formal way. Practical examples are given in A.2 (Destination Sort Plan) and A.3 (Sequence Sort Plan).

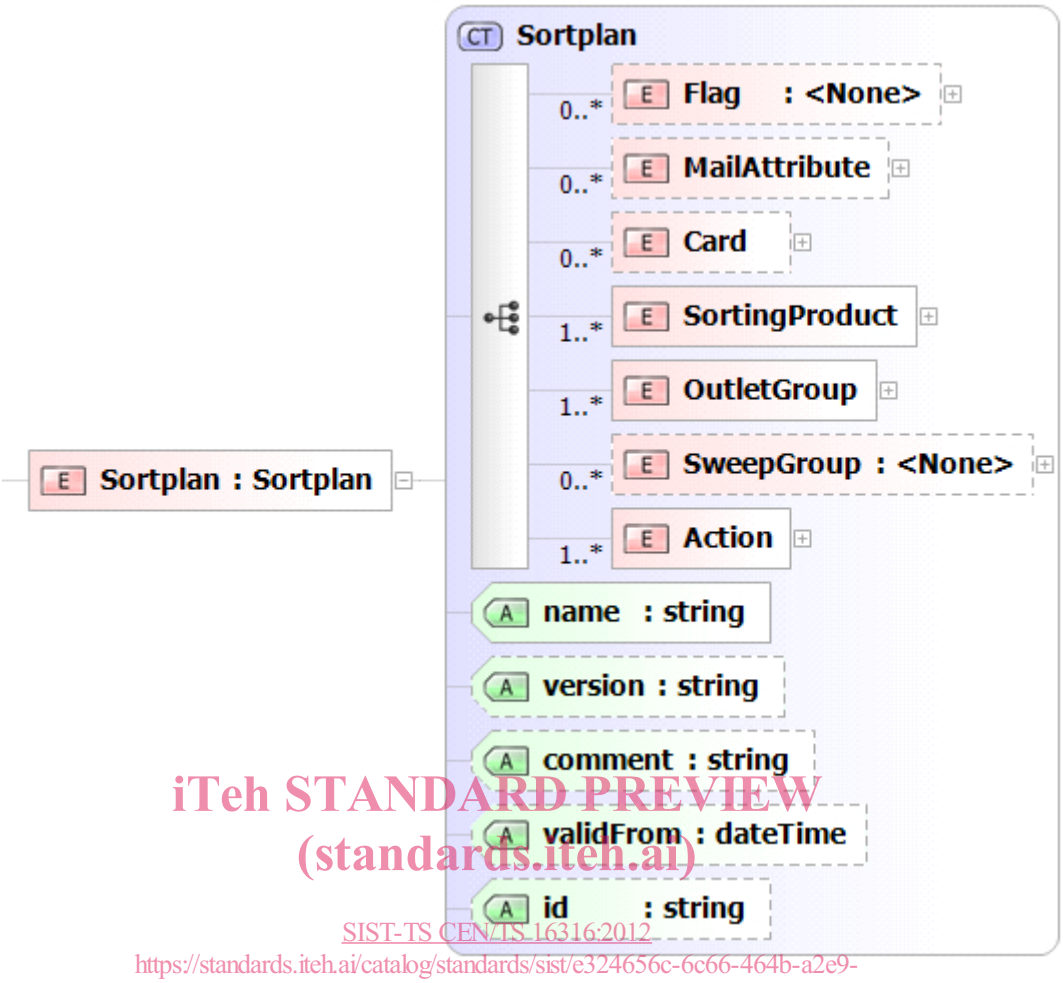

Figure 1 — SortPlan

The attributes of the sort plan are:

— Name (required): the name of the sort plan;

— Version (optional): an identification of the version of the sort plan;

— Comment (optional): a free text field for comment;

— Valid From (optional): date from which the sort plan may be used by the sorting machine. If this field is not used the sort plan may be used by the machine as soon as it receives it;

— Id (optional): a unique identifier as handle for external information system.

6.1.2 Flag

Arbitrary name-value pairs can be attached to a sort plan (see Figure 2). This is used to express machine-specific extensions.

Figure 2 — Flag

6.1.3 MailAttribute

A MailAttribute is a list of non-address attributes such as mail format, weight, priority, etc (see Figure 3).

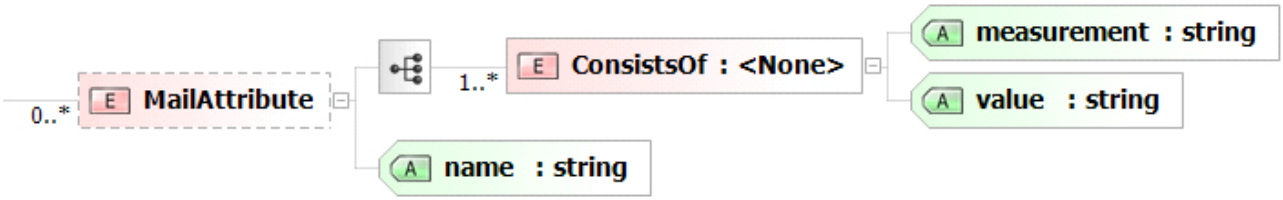

Figure 3 — Mail Attribute

A MailAttribute is identified by its name: a unique key inside the sort plan is used to identify this occurrence of Mail Attribute. This name is mainly used by the sort plan management system.

A MailAttribute is described by a list of couple measurement – value:

— measurement: The name of the measurement performed by the machine on mail items. This string should be recognised as a keyword by the target machine software.

EXAMPLE 1 measurement ="length"

— value: The description of the set of value for this category. The target machine software should know how to interpret the format of this string.

EXAMPLE 2 measurement ="length" value="[10mm, 100mm]"

Inside a MailAttribute, the pairs of measurement - value are combined together with a logical AND.

It is essential that the MailAttributes used within a single sort plan do not overlap.

6.1.4 Card

Cards are used as separators, mostly within sequencing sort plans (see Figure 4).

Figure 4 — Card