SLOVENSKI STANDARD
oSIST prEN 17367:2022

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Ravnanje z odpadki - Izmenjava podatkov med komunikacijskim sistemom upravljanja in zalednim sistemom za nepremične zabojnike za zbiranje odpadkov - Funkcijska specifikacija in semantični podatkovni model

Waste Management - Data communication between communication management system and the back office system for stationary waste collection containers - Functional specification and the semantic data model

Abfallwirtschaft - Datenkommunikation zwischen dem Kommunikationsmanagementsystem und dem nachgeordneten Verwaltungssystem für Stationärcontainer

Gestion des déchets - Communication de données entre le système de gestion des communications et le système de services support pour les conteneurs fixes de collecte des déchets - Spécifications fonctionnelles et modèle sémantique de données

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13.030.40	Naprave in oprema za odstranjevanje in obdelavo odpadkov	Installations and equipment for waste disposal and treatment
35.240.99	Uporabniške rešitve IT na drugih področjih	IT applications in other fields

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English Version

Waste Management - Data communication between communication management system and the back office system for stationary waste collection containers - Functional specification and the semantic data model

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 183.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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European foreword

This document (prEN 17367:2021) has been prepared by Technical Committee CEN/TC 183 “Waste management”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN enquiry.

Introduction

This standard aims at realizing the interoperability between communication management systems of waste collection containers and related back-office systems of waste processing companies. This is intended for use in a single system architecture with (potentially) different vendors, end-users and waste processing companies. Purposely we strive at making a base for future developments in the branch.

This document has taken the present version 2.1 of the Dutch STOSAG Norm as a starting point.

This document is accompanied by a set of technical specifications for software developers implementing this standard. Those are made available on Github and include:

- REST API specifications in Open API Specification (OAS) format;
- XML schema specifications that are derived from the semantic data models described in this standard;
- XML example files.

The technical specifications can be found here: https://github.com/Michiel-s/EN 17367.

1 Scope

This document defines the standard for exchanging stationary waste collection container information between the collection container system and the back-office systems.

This document defines the way to exchange data between the “Communication Management System” of the collection container and the “Back-Office Systems”.

The exchange of data between the “Collection Container Systems” and the “Communication Management Systems” or the “Back-Office Systems” is excluded.

This document targets two streams of information in the waste processing industry:

- The processing of transactions and system information for the deposit of waste from the communication management systems to the back office systems.
- The processing of authorization and configuration information from the back-office systems to the communication management systems.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

3.1
authorization
relation between the collection container and the unique identifiers specifying whether or not the UID can be used to perform a transaction on the collection container

3.2
authorization list
register containing unique identification numbers that should be refused or handled by the system using the register

3.3
black list
authorization list that contains unique identifiers that are not allowed to deposit waste and fractions

Note 1 to entry: This standard does not provide a data model to exchange black list information. Instead, a white listing mechanism shall be used, see 5.3 for the Authorizations message.

3.4
collection container
reservoir capable of containing waste and fractions for a group of end-users

3.5
collection container system
complete set of components, hardware and software to operate a group of collection containers

3.6
communication management system
CMS
specific part of the collection container system that is responsible for the communication with the back-office systems and the collection containers in the field

3.7
end-user
party (e.g. citizen, household or business) that wants to dispose waste and fractions

3.8
management and configuration system
specific part of a waste processing back-office system that is responsible for the data communication with communication management system(s) of suppliers of collection container systems

3.9
transaction
registration of a deposit of waste and fractions in the collection container

3.10
unique identifier
UID
unique identifier of medium by which an end-user authenticates itself

EXAMPLE This medium can be e.g. a RFID tag, NFC chip or QR code.

3.11
waste processing back office
systems that the waste processing companies use to manage the collection of waste and fractions, containers and related internal processes

3.12
white list
authorization list that contains unique identifiers that are allowed to deposit waste and fractions

4 Functional requirements

4.1 Involved systems and their functions

This paragraph gives an overview of the relevant systems and the situation in which they interact in Figure 1.

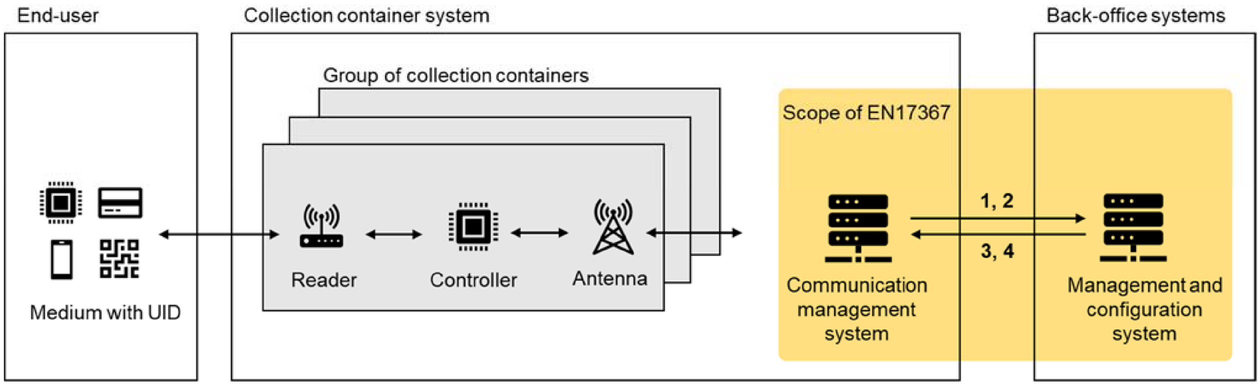

Figure 1 — Overview of the process and involved systems

This norm defines the data communication between the communication management system of the collection containers and back-office systems as depicted by the numbers 1 to 4. All other interfaces are out of scope and merely provided as an overview of how a complete system architecture could look like.

Table 1 gives a description for each of the objects and systems involved.

Table 1 — Descriptions objects and systems

Object or system	Description
Medium with UID	The medium held by an end-user has a unique identifier (UID) that can be used to gain access a collection container.
Collection container	A container that can be used by multiple end-users to deposit waste and fractions. The container is often stationary, but this is not necessary. The design of the collection container is vendor specific. Usually a collection container consist of several components, including: • Reader: device, placed on a collection container, capable of reading data contained on a medium. • Controller: device capable of interaction with a reader and transferring the data to usable information and controlling the behaviour of a collection container. • Antenna for remote communication with vendor system e.g. using the mobile network.
Collection container system	The collection container system is vendor specific and consists of a group of collection containers and a communication management system. The communication management system is responsible for the interaction with the group of collection containers it manages. Furthermore this system has the responsibility to provide all transaction and system information to the back-office systems and process received authorization and configuration information
Back-office systems	The back-office systems receive, store and make available the information of the collection containers systems.

4.2 (Business) processes supported by this standard

There are four use cases that are supported by the standard. A description of each of these use cases can be found in Table 2.

Table 2 — Use case descriptions

Role	Use case
Collection container system	1. The collection container system sends transaction information to the back-office systems. 2. The collection container system sends system information to the back-office systems. 3. The collection container system receives an authorization list from the back-office systems. 4. The collection container system receives a configuration from the back-office systems.
Back-office systems	1. The back-office systems receive transaction information from the collection container system. 2. The back-office systems receive system information from the collection container system. 3. The back-office systems send an authorization list to the collection container. 4. The back-office systems send a configuration list to the collection container.

This resulted in four interfaces defined between collection container systems and back-office systems as depicted in Figure 2.

Note that the interface for authorization information is split into 2 sub-interfaces. Interface 3a to send an initial or complete new/updated authorizations list and 3b to specify incremental changes (patches) to an existing authorizations list.

Note that there is no sequential order required for the interfaces to work. The interface numbering is only for reference purposes within this document.

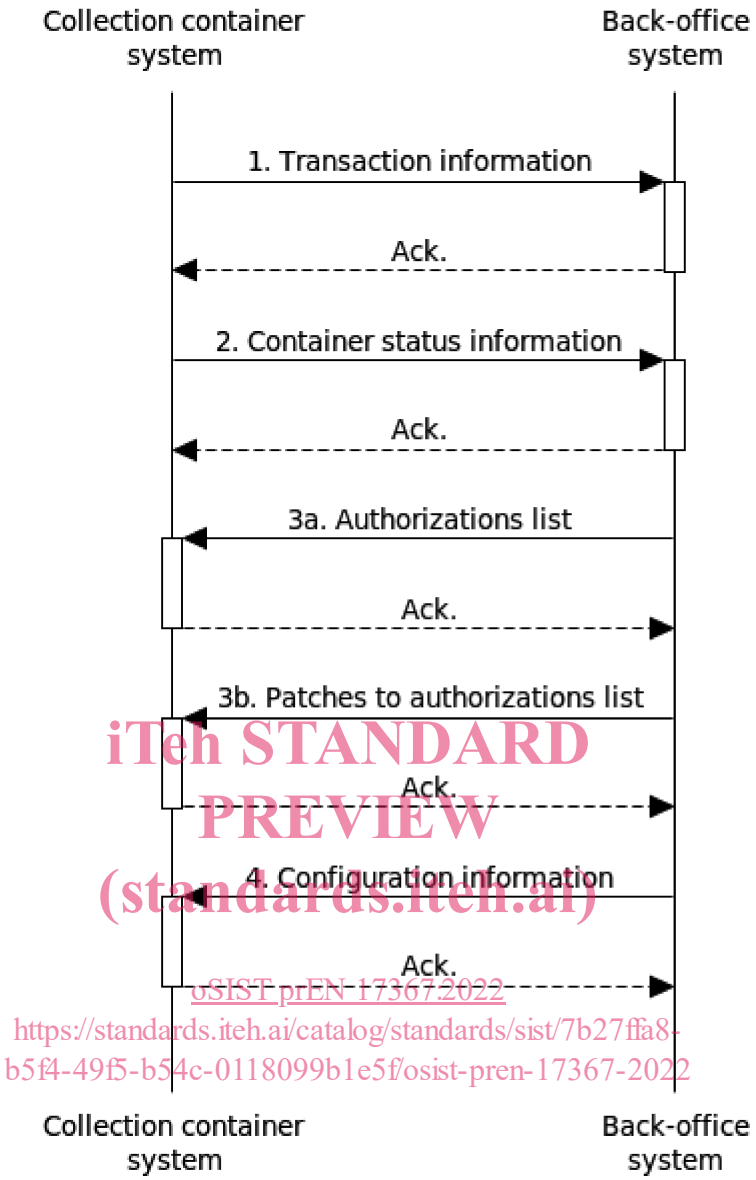

Figure 2 — Sequence diagram of interfaces

4.3 Unique identification of mediums

4.3.1 General

End-user authentication mediums (e.g. RFID tags and NFC chips) shall be uniquely identified by a combination of a) the medium type, b) an issuer identifier and c) an identifier of the medium itself.

4.3.2 Medium type

The medium type is an 8-bit code according to the Medium Types code list as specified in 6.2.

EXAMPLE An LF RFID tag has medium type code 3 (integer), which corresponds to an 8-bit binary code of 0000 0011.