



BSI Standards Publication

Postal Services — Statement of mailing submission

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Comments arising from the use of this Draft for Development are requested so that UK experience can be reported to the international organization responsible for its conversion to an international standard. A review of this publication will be initiated not later than 3 years after its publication by the international organization so that a decision can be taken on its status. Notification of the start of the review period will be made in an announcement in the appropriate issue of *Update Standards*.

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The UK participation in its preparation was entrusted to Technical Committee SVS/4, Postal services.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Services postaux - Déclaration de dépôt du courrier

Postalische Dienstleistungen - Übertragung von Daten für
Briefanlieferungen

This Technical Specification (CEN/TS) was approved by CEN on 4 June 2011 for provisional application.

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Foreword

This document (CEN/TS 15523:2011) has been prepared by Technical Committee CEN/TC 331 "Postal Services", the secretariat of which is held by NEN.

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.

This document supersedes CEN/TS 15523:2006.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

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

The UPU's contribution to the specification was made, by the UPU Standards Board¹⁾ and its subgroups, in accordance with the rules given in Part V of the "General information on UPU standards".

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

¹⁾ The UPU's Standards Board develops and maintains a growing number of standards to improve the exchange of postal-related information between posts, and promotes the compatibility of UPU and international postal initiatives. It works closely with posts, customers, suppliers and other partners, including various international organizations. The Standards Board ensures that coherent standards are developed in areas such as electronic data interchange (EDI), mail encoding, postal forms and meters. UPU standards are published in accordance with the rules given in Part VII of the General information on UPU standards, which can be freely downloaded from the UPU world-wide web site (www.upu.int).

Introduction

Widespread proliferation of electronic, internet-based data communications provides a cost-effective platform for integrating a global mail communication system. The essence of such integration is an automated exchange of computerised information between mailer's, postal and recipient's domains. Within each of these domains there is a wealth of information that has been or could be collected, computerised and subsequently communicated to other domains to enhance the overall mail system. This information is typically information *about* mail units and it allows for effective control and management of the entire mail distribution network.

Most commercial-purpose mail is created and finished with the help or under control of computer-driven equipment. Mail-descriptive computerised data is a by-product of the mail creation/finishing process and it has significant value for both postal operators and their agents and frequently for mail recipients. Specifically, when a plurality of mail items (designated as a *mailing submission*) are prepared for induction into a postal distribution network by a mailer, it is only natural that the mailing submission should be accompanied by an electronic document (or computer file) that is commonly referred to as a *statement of mailing submission*. The main goal of the statement of mailing submission (SMS) is to provide support information for mission-critical applications in the mail communication system, and specifically for applications in the postal domain. The most important applications in the postal domain come from operations (mail entry/induction, processing/sorting, transportation and delivery), postal marketing (maintenance of existing products and services, design of new postal products and services, customer relationship management and management of quality of service), and finance (revenue management including collection and protection of revenue).

The main purpose of the present technical specification is to define basic concepts associated with the statement of mailing submission (framed using methodology of an entity-relationship model), and then to define the content, message structure and protocol that can be used by mailers or their agents to communicate to posts information supporting major postal applications, and also to provide a detailed analysis of application-level security.

The following section describes information requirements supporting major postal processes.

Postal operations information requirements

Mail entry/induction process is a controlled acceptance process that is designed to enable transfer of typically medium or large size mailings (e.g. mailings containing more than several hundred mail items) from mailers or their agents to postal operators. *Mail entry* process involves verification of mail make-up (i.e. check of the information present on mail units for its postal process friendliness) and verification of payment. The process is based on comparison of information created or otherwise known to postal acceptance personnel against information supplied by mailer. Critical data elements supporting mailing submission entry are:

- Mailing submission composition such as number of mail units of various kind contained in the submission;
- Type and identities of mail units included into submission;
- Gross and net weight of mail units included into submission and gross and net weight of the submission itself;
- Worksharing information if mailing submission has been pre-sorted or contains mail pre-barcoded by mailer or its agents. This information includes geographic distribution (number and type of mail units for each postal code), postal codes assigned to and marked on each mail unit as well as information concerning quantity, location and markings for all non-qualified (or residual) entities;
- Payment information including accounting information and postage information for various categories of postal products included in the mailing and totals for each category;

- Identity of the SMS associated with the mailing submission;
- Security information such as key certificates as described in the present specification (Annex D).

Mail processing information requirements support cost-effective mail sorting. In addition to the information identified above, the mail sort-supporting electronic information may include identities of all mail units included in the submission linked with their associated address information including postal codes.

Mail transportation information requirements support cost-effective transportation of mail units and aggregates between postal processing and delivery offices. Thus, in addition to the information identified in the previous sections, mail transportation-supporting information may include (if they are known during mail preparation process) identities and scheduling data for various transportation vehicles (trucks, railroad cars, aircrafts and boats) that will be used for transporting mailing submission.

Mail delivery process information requirements support cost-effective delivery of mail. In addition to the information described above mail delivery-supporting information may include number, identity and type of mail units that require special delivery or handling (e.g. proof of delivery or return receipt).

Postal marketing information requirements

Marketing information is mainly concerned with a detailed description of a mailer's use of various postal products and services offered by a postal operator. These may include:

- Number of first class mail items included in the submission;
- Number of second class mail items included in the submission;
- Number of special rate mail items (e.g. overweight or oversize);
- Number of mail items that require special delivery (e.g. registered, certified, time-specific delivery etc.);
- Number of items that require forwarding services or address correction;
- Preferred delivery instructions, redirection and address services (e.g. address hygiene).

Postal finance information requirements

Postal financial applications require an effective payment mechanism for the services by mailers or their agents. These include automatic generation of all required accounting and funds transfer data and its supporting documentation for billing and remittance processing. Finance information should include as a minimum data elements that allow to:

- Create, delete and update customer accounts (e.g. unique account IDs);
- Identify products and services used by the mailer together with their current tariffs;
- Identify mail attributes (e.g. item count, weight, volume) for specific postal products and services;
- Support payment for Business Reply and other recipient-paid services;
- Automate the receipt and processing of payments (e.g. by using Electronic Funds Transfer);
- Automate the processing of all legitimate refunds to mailers;
- All required management and control supporting reports.

Methodology

The methodology adopted for the organisation of SMS begins with a data structure describing all practical knowable information about mailing submission. This data structure containing all-inclusive information is a sort of a “super” file or “super” message. The specification describes how to collapse (or cluster) this super message into new data structures suitable for particular postal applications. This is done by eliminating the non-essential information depending on the informational needs and requirements of postal applications.

Selection (or adaptation) of data elements, their formats and communication protocols for various specific applications and environments for the SMS from the ones described in the present specification are left to postal operators and their customers. It was felt that no group of experts would have sufficiently detailed knowledge of a broad variety of existing and future postal applications and technical environments in order to accommodate even the most common ones. For this reason, it was decided that providing a definition of a super, all-inclusive and adaptable message and the methodology of collapsing it into application-specific messages (statements) would be the best choice. Similarly, timing considerations for various possible messages that could be exchanged between mailer and postal domains are outside of the scope of the present specification. Messages that are defined and described here can be arranged to be created by mailers and communicated to postal operators *before, during or after* the actual induction process takes place, depending on the value and the intended use of the communicated information. The specification leaves the choice of timing considerations to postal operators and their customers.

1 Scope

This Technical Specification specifies a methodology that allows postal operators to define specific statements of mailing submission customised according to their environment and applications.

The document defines information requirements for existing generic postal information processing applications related to major postal functions, namely operations, finance and marketing by specifically identifying the information that could be collected within the mailer's domain and transmitted to the postal domain.

In addition, this document defines the organisation of data into messages by describing data content, format and communication protocol suitable for communication of data originating in the mailer's domain.

The specification also provides a detailed analysis and recommendations for implementing application-level security threats and countermeasures particularly relevant for postal revenue protection in controlled mail entry settings.

Finally, this document provides several examples of concrete statements of mailing submissions and an example of a secure communication protocol recommended for transmission of such statements.

NOTE The SMS describes letter mail or flats that are submitted for distribution and would not deal explicitly with content of letters or flats whether it concerns customs or any other party that could in principle be interested in knowing the content of these mail units.

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.

EN 14615:2005, *Postal services – Digital postage marks – Applications, security and design*

ISO 10126-2:1991, *Banking – Procedures for message encipherment (wholesale) – Part 2: DEA algorithm*

ISO/IEC 9798-3:1998, *Information technology – Security techniques – Entity authentication – Part 3: Mechanisms using digital signature techniques*

ISO/IEC 15418, *Information technology – Automatic identification and data capture techniques – GS1 Application Identifiers and ASC MH10 Data Identifiers and maintenance*

ISO/IEC 15434, *Information technology – Automatic identification and data capture techniques – Syntax for high-capacity ADC media*

ISO/IEC 15459-1, *Information technology – Unique identifiers – Part 1: Unique identifiers for transport units*

3 Terms and definitions

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

3.1

address list selection

process of selecting a mailing address for the intended recipient of the message

3.2

agent

entity involved in any part of the provision of postal services in respect of a mail unit

3.3

agent attribute

characteristic of the agent which is or can be represented by a data value

3.4

communication domain

set of parties, agents, and processes that together play a specific functional role (such as sender, channel or recipient) in a mail communication system

3.5

consolidator

party that is responsible for assembling mail units from a given creator together with mail units from other creators

3.6

containerisation

process of assembling together and putting mail units into receptacles for transportation

3.7

controlled acceptance/entry mail (CAM/CEM)

mail unit or mail aggregate that is examined by postal personnel before being accepted for processing for the purpose of compliance with postal regulations concerning proper payment (accounting) and mail make up

3.8

mail creator

party that is responsible for production (creation) of a mail item, a mail unit or an aggregate

3.9

electronic sortation

process of sorting a list of mailing addresses into groups having common characteristics (such as identical postal codes)

3.10

electronically exchanged message

EEM

electronic message sent or received by a mailer or postal operator during the process of mail creation, preparation, submission, acceptance, processing and delivery

3.11

expectation

set of mail unit attribute name-value pairs predicted, derived or assumed for a given date or a date range

3.12
finishing

process of direct printing of information on (or applying labels containing information to) assembled mail units, said information concerning payment evidence and endorsements required for the entry of finished mail units into the postal distribution network

3.13
insertion

process of folding printed message(s), assembling the content (that includes the message and optional additional enclosures) and inserting the entire content into a mailing envelope

3.14
list preparation (address cleansing)

process of comparing between mailing (postal) addresses in the selected address list and a standardised list containing corrected and up-to-date postal addresses for the purpose of finding and correcting erroneous entries in the selected list

3.15
mail unit

mail item or collection of mail items which are constrained to form a physical unit

3.16
mail unit attribute

characteristic of a mail unit which is or can be represented by a data value

3.17
mail induction/entry

process whereby mail units are handed over to a postal operator and which results in either the postal operator taking responsibility for the mail units concerned or rejecting all or some of the mail units presented for hand over

3.18
mail item
item
mailpiece
postal item

indivisible mailable entity in respect of which a mail service contractor accepts an obligation to provide postal services

3.19
mail receptacle

physical device which may be used to contain or carry mail so as to assist in its handling, transportation, storage or delivery as a unit

EXAMPLE Mailbags, trays, recipient mailbox, wheeled containers (roller cages), pallet and pallet-based containers and airfreight containers (ULDs).

NOTE Receptacles may contain mail which is housed in other (lower level) receptacles. For example, a roller cage may contain trays and/or bags of mail as well as individual (loose loaded) mail items and bundles. Some types of postal receptacle (e.g. roller cages and ULDs) have a residual value; others need not (e.g. disposable trays).

3.20
mail receptacle attribute

characteristic of a mail receptacle which is or can be represented by a data value

3.21
mail aggregate
aggregate

set of mail units that satisfy specific criteria defined in the context of a particular application

3.22

aggregate attribute

characteristic of an aggregate which is or can be represented by a data value

3.23

aggregate catalogue

collection of attribute names for mail units included in an aggregate

3.24

mailing submission

mail aggregate which has a unique identification and is presented or handed over for processing, by a postal operator, as part of a single induction unit

3.25

message preparation

process of preparing data that is designed to be sent as a message (content of a mail item) to the intended recipient

3.26

observation

set of mail unit attribute name-value pairs captured at a given date

3.27

observation attribute

set of name-value pairs related to or characterising the observation process

3.28

originator

party that controls a mail unit's content (i.e. the message to the recipient) and the mail unit's destination address and has the overall legal control and responsibility for the mail unit

3.29

party

legal entity involved in a mail communication process

3.30

party attribute

characteristic of the party which is or can be represented by a data value

3.31

payer

party responsible for payment of postal/carrier charges for services rendered by mail services contractor in respect of a mail unit

3.32

physical sortation

process of sorting mail units into groups having common characteristics (such as identical postal codes)

3.33

postal product/service

agreed-upon set of rules operating on the values of mail unit attributes governing both actions to be taken on the mail unit and communication of observations to all authorised parties

3.34

postal product/service attribute

characteristic of a postal product which is or can be represented by a data value

3.35

post/carrier domain

domain of the mail unit collection, acceptance, processing, transportation and delivery that includes all parties, agents, processes and their relationships that are involved in these activities

3.36

process in the mailer domain

series of sequential functional activities (or sub-processes) within the mailer domain resulting in finished mail units and aggregates being ready for entry into a postal/carrier distribution network

3.37

process in the postal domain

series of sequential functional activities (or sub-processes) within the postal domain including collection, facility entry, acceptance, processing (culling, facing, sorting), containerisation and transportation resulting in a mail unit being delivered to a recipient, discarded or returned to the mail originator (or a party authorised by the mail originator)

3.38

recipient domain

domain of the mail unit receipt and after receipt processing including activities when the mail unit has been received by a party or an agent other than the party specifically indicated by the sender as a recipient. It includes all parties, agents, processes and their relationships that are involved in these activities

3.39

sender/mailer domain

domain of the mail unit creation, finishing and submission for delivery that includes all parties, agents, processes and their relationships that are involved in these activities

3.40

statement of aggregate

collection of attribute name-value pairs for an aggregate assembled for the purpose of a specific application in the context of which the mail units comprising the aggregate form a logical unit

3.41

statement of mailing submission

collection of attribute name-value pairs which specifies a mailing submission and its content

3.42

submission group

aggregate consisting of a collection of mailing submissions that share an explicitly specified common attribute or attributes

3.43

submitter

party responsible for submitting (inducting) a mail unit or an aggregate into postal/carrier distribution network

4 Symbols and Abbreviations

CAM	controlled acceptance mail
CEM	controlled entry mail
DPM	digital postage mark
EEM	electronically exchanged message
ID	(identifier for) identity

MU	mail unit
MS	mailing submission
MS-ID	mailing submission identifier
PSD	postal security device.

NOTE Throughout this document, the following notation is used: entity.attribute. For example, the mail unit identifier is designated as "mailunit.ID".

5 General Concepts

This clause provides a detailed explanation for the basic concepts defined in the previous clause and the motivation behind introducing these concepts and their definitions.

This clause provides the background, motivation and an explanation for all concepts and objects defined in Clause 3.

General concepts are described referring to a mail communication system diagram presented in Figure 1.

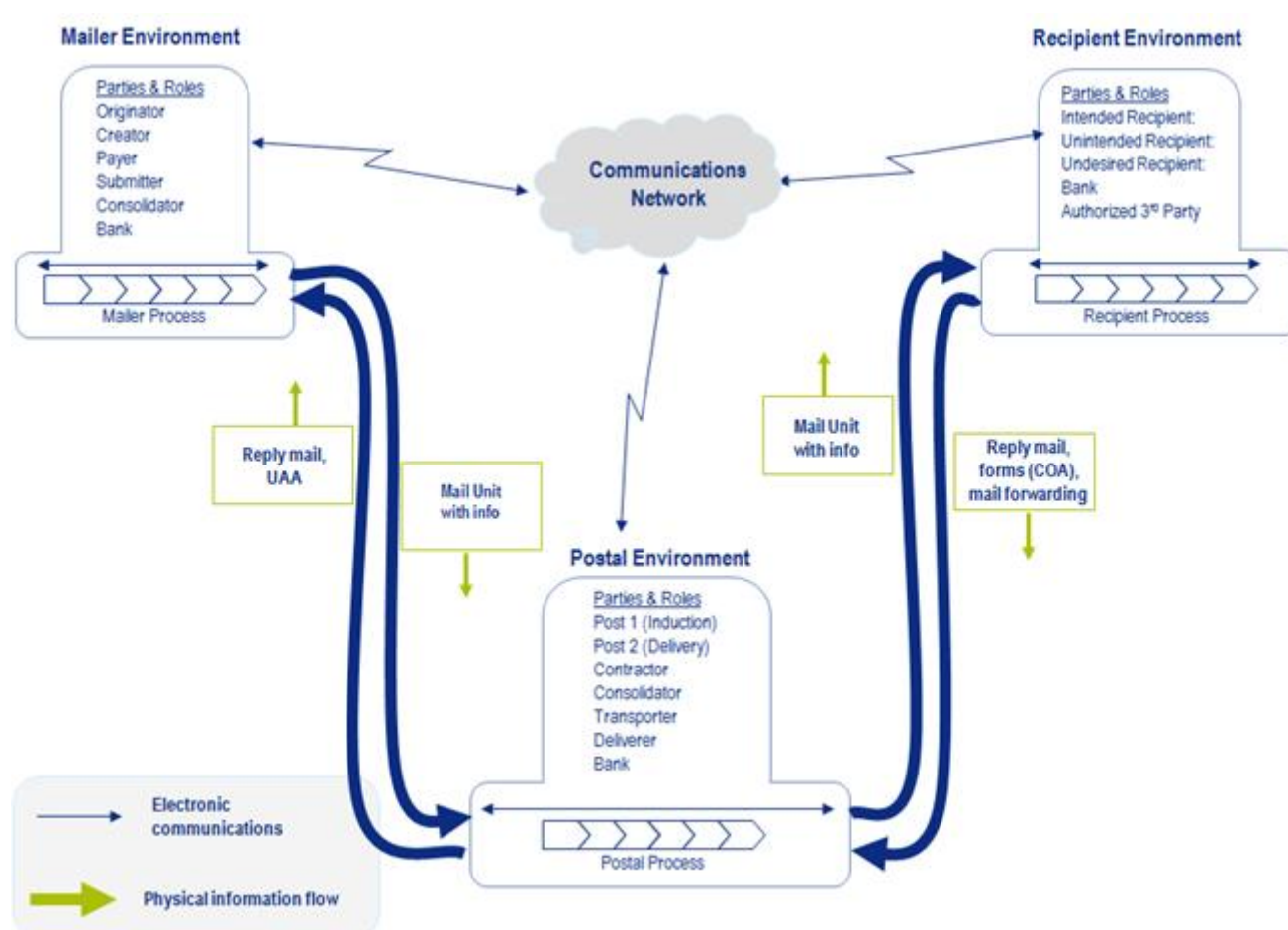


Figure 1 – Mail communication system diagram

5.1 Mail communication system domains

The communication system is a system that enables a *sender* to send (communicate) a *message* to a *recipient* using a *communication channel*. A mail communication system has three basic domains, namely the domain of the message sender, the domain of the message carrier (the communication channel) and the domain of the message recipient. In the context of a mail communication system, a *message* constitutes a *physical entity* (defined in the present document as the mail unit) and as such, it is understood to constitute a single physical object (mail item) or to include a broad variety of physical objects such as post cards, letters, flats, parcels or packages constrained to form a physical unit. Specific to the mail communication system is the notion that messages frequently have value other than informational value, for example monetary, legal or social value.

There are three commonly considered domains, namely Sender/Mailer, Post/Carrier and Recipient. Each domain can be described in terms of parties, agents, processes and their relationships. In the mail communication system, parties involved in each domain are usually independent legal entities that are nevertheless dependent on each other in the overall system process that involves creation and exchange of material (*mail units*) and informational objects (*mail unit attributes, observations, expectations and their attributes*) between domains.

5.2 Parties, agents and their roles

Parties involved in mail unit creation, finishing and submission for delivery are:

- Originator;
- Creator;
- Payer;
- Submitter;
- Consolidator;
- Bank (or other financial service institution involved in payment for mail unit creation, finishing and distribution).

The originator is understood as the party that needs to use the mail communication system to send mail units to (a list of) addresses that are chosen by the originator. The originator is also the primary beneficiary of communication. In the context of business applications involving mail communications, the originator also controls these applications, for example invoicing or product advertising.

The creator is understood as the party that controls physical process of mail unit creation, typically under a contract with the mail originator (for example when the mail creator and originators are different legal entities).

The payer is defined as the party that pays for postal products and services; frequently the originator and payer are the same legal entity.

The submitter performs the technical role of submitting mail units for induction into the mail distribution network, while a consolidator combines mail units from multiple mail creators, in order to achieve certain desirable characteristics for the resulting mail unit or aggregate. The most frequent reason and purpose for consolidation is the value added by presorting or other worksharing activities. In the vast majority of cases the consolidator also assumes the role of the submitter.

Finally the bank (which is used here synonymously with a financial institution) is capable of providing necessary credit and funds transfer functions.

Modern mail communication systems involve computer-controlled electro-mechanical machinery (e.g. sorting machines), transportation (e.g. delivery vehicles) and computer equipment (e.g. IT systems) and human

participants (e.g. post office clerks). Mail processing machines, equipment and human participants are designated as agents. Agents involved in mail unit creation, finishing and submission for delivery are various automated, semi-automated and manual systems and their operators such as inserters (mail assembly machines), mailing machines, franking devices, mail sorters, containerisation systems, computerised accounting devices (also known as postal security devices or PSDs), scanning devices and the like. For example, mail sorting machines typically organise letters or flats into groups of mail items having identical postal codes by using information present on mail items, such as a destination address block. Important technology used by a vast majority mail sorting machines are either Optical Character Recognition or bar code reading.

Frequently, post and carriers employ several subcontractors or trusted agents in the complex process of mail acceptance, sorting, transportation and distribution. Parties involved in mail unit acceptance, induction, processing, transportation and delivery are:

- Originating postal operator (or a private carrier);
- Destination postal operator (or a private carrier);
- Consolidation contractor;
- Transportation contractor;
- Delivery contractor;
- Bank (or other financial service institution involved in payment for mail unit acceptance, induction, processing, transportation and delivery functions).

The originating postal operator or carrier may be the only party that is involved in mail unit/aggregate processing, transportation and delivery. Such is the case when the mail unit destination address is within the geographical boundaries of a country or territory where the originating postal operator is authorised to provide mail communication services and when the originating postal operator does not employ any other legal entities to perform such services. Alternatively, there could be several other legal entities involved in the provision of mail communication services such as contractors and other postal operators or private carriers. There also could be several intermediate carriers and contactors between the originating postal operators or carriers and the destination postal operators or carriers, for example transportation contractors as defined below.

Agents involved in mail unit acceptance, induction, processing, transportation and delivery are various automated, semi-automated and manual systems and their operators such as cullers, facers/cancellers, mail sorters, containerisation systems, scanning devices, mail transportation vehicles, railroad cars, airplanes, mail clerks and the like.

Parties participating in the mail communication system are usually involved in mail units physical handling (e.g. sorting, transportation, delivery), in mail units-related information handling (e.g. tracking information capture and communication) and/or in mail units-related financial transaction handling (e.g. postage payment). The defining characteristic of a party is its legal status as an entity that is entrusted in the execution of any of the aforementioned aspects or activities of the mail communication process.

NOTE 1 All parties and agents considered in this document must be uniquely identifiable within the context of a given application. Methods of assigning identifiers to various parties and objects are addressed by ISO Standards and UPU standards: ISO/IEC 15418, ISO/IEC 15434, ISO/IEC 15459-1, UPU S25 and UPU S27.

NOTE 2 Roles of the parties and agents involved in the mail communication systems can be codified and published (i.e. made available to all interested parties) in the form of standardised code lists.

NOTE 3 It should be stressed that the list of parties, their agents and their roles is not exhaustive and intended for illustrative purposes. New parties and agents are continuously introduced when mail communication systems are undergoing complex changes associated with the introduction of new technology, change of ownership (privatisation) or

change in the legal status of protected services (liberalisation). The framework of the present document is designed to accommodate the introduction of new parties and agents.

5.2.1 Party attribute

Party attribute is a useful concept that enables the capture and storage of information related to the party, that is not covered by the party name or its identifier. Examples of party attributes are the party's functional role in the process, its classification code according to the industry classification system, identifier for a contract that governs the party's relationship with another party or parties, various restrictions concerning the party's role and similar parameters.

5.2.2 Agent attribute

Agent attribute is a useful concept that enables the capture and storage of information related to the agent that is not covered by the agent name or its identifier. Examples of agent attributes are the agent's functional role in the process, year of production (in case of equipment), name of the manufacturer, various technical parameters such as scanning resolution, number of output bins, and similar parameters.

5.3 Physical objects

5.3.1 Mail item

Mail item is a single (indivisible) object that is physically moved through the postal distribution network from sender to recipient. Mail items typically carry a recipient destination address or a pointer to that address. Examples of mail items are post cards, letters, flats, express mail items, parcels and packets.

5.3.2 Mail unit

The concept of mail unit is a generalization of the concept of mail item. Mail unit is one of the central and most fundamental concepts in mail communications. Mail unit is a physical object that is transported at least through a portion of the mail communication network. Mail units by definition are either individual mail items or containers that consist of mail items and receptacles. Mail units are distinguished from empty mail containers that are defined as receptacles. Examples of mail units are post cards, letters, flats, parcels, packages, irregular parcels and pieces, and various receptacles containing mail such as flat trays, letter trays, IPC trays, sacks, pallets, bundles, baskets, roller cages, containers, refrigerated containers, unit load devices and transportation units. Each mail unit has a lifetime that is understood as the period of time between creating a mail unit or its entry into, exit from or dismantling of the mail communication system (in the case of composite mail units that are collections of mail items or other mail units).

Mail units can be a single (individual, indivisible, atomic) or compound. Single mail units are post cards, letters, flats, packages, parcels and similar objects. Compound mail units are collections of single mail units such as a tray, a bundle, a sack, a pallet, a roller cage containing a collection of trays, several pallets containing trays that are loaded onto a vehicle or an airplane. As a physical unit (object), a mail unit has a unique and identifiable location at any given point in time (date) during its lifetime. The mail unit is usually one of the primary targets of analysis and monitoring (the atomic object). The mail unit is characterized by its attributes. Mail units can be assembled together in a single container or a collection of containers for the purpose of transportation or processing. Mail units could be nested in the sense that smaller size containers can be assembled together in larger size containers, for example trays assembled together in a palette. Each individual container together with mail units contained therein is a mail unit in its own right that can be referenced through its identifier(s) and is fully characterised by its attributes.

All mail units considered in this document must be uniquely identifiable within a given application.

5.3.3 Mail receptacle

Mail units are transported using various types of containers. It is frequently important to distinguish between empty containers and containers that carry mail units. Mail receptacle is a generic term that is used to indicate an empty container. Examples of mail receptacles are trays, IPC trays, sacks, pallets, baskets, roller cages, refrigerated containers and unit load devices. Mail receptacles may or may not have unique identifiers. RFID technology is frequently used for identifying large containers carrying cross border mail units.

5.3.4 Aggregate

Unlike a mail unit, an aggregate is not constrained to form a physical unit and does not necessarily have a single defined location at any given point in time (for example, a part of an aggregate might be in one place, while another part could be in another place). Examples of aggregates are mailing, mailing submission, induction unit, submission group, consignment and mail action. Specifically, mailing is an instance of the an aggregate that corresponds to the collection of mail units (e.g. letters) to be generated as a result of a specific business process, such as an invoicing or an advertising campaign.

All aggregates considered in this document must be uniquely identifiable within the context of a given application.

5.3.5 Mailing submission, acceptance and submission group

A mailing is an aggregate from the mailer's²⁾ perspective. Typically, it might correspond to the set of mail units (e.g. letters) generated as a result of a business process, such as an invoicing cycle or an advertising campaign.

The task of generating, finishing and handing mail over to the postal operator is carried out by the mail submitter. This may be the mail originator, or a separate party working on the mail originator's behalf. For major mailings, the process may be spread over a number of days, or even weeks, necessitating that the mailing is broken down into sub-units which can be separately produced and handed over. Each of these units is called a *mailing submission* or *submission*. The mail submitter determines the breakdown of a mailing into submissions. All mail items that constitute a submission are handled as a unit and are presented to the postal operator on the same date and location (the place of the single hand-over transaction or acceptance/entry location). Each mailing submission is always associated with one date (the date of submission). The single hand-over transaction is the purpose (application) for the aggregate defined as the mailing submission.

Each submission thus consolidates a set of mail units forming part of a mailing, which is handed over together for acceptance, verification and postal processing. However, the actual hand-over process, referred to as *induction*, is usually organised in accordance with some schedule: typically, either the postal operator will collect submissions, or the mail submitter will deliver them to a postal facility, at one or more scheduled times each day. Given this, a single hand-over transaction may involve several submissions collectively referred to as an induction unit (see UPU glossary for definition).

The concept of *mailing* concerns only the mailer and reflects the mailer's view of the information related to the mail units as they support the mailer's business process (e.g. a batch of invoices or an advertising campaign). As a result, the mailing identifier is typically useful only to the mailer and it does not have any meaning outside the mailer domain (e.g. for the postal operator). Similarly, the concept of an induction unit reflects the postal operator's process of acceptance, verification and subsequent processing of mail items, and reflects the Post's view of the information related to the mail units involved. The induction unit identifier is typically meaningful only for the postal operator or its authorised agents. Normally, an induction unit consists of multiple mailing submissions accepted (or rejected) as part of a single hand-over transaction. These multiple mailing submissions are considered together (as a unit) to meet postal operator's financial or operational information processing needs. The concept of a *submission group* is useful when it is desirable or convenient to consider multiple mailing submissions as a group, regardless of whether these submissions form part of a

2) The use of the term mailer is meant to cover the mailer and any party that acts on the mailer's behalf (mailer's agents).

single hand-over transaction. This could happen, for example when all mailing submissions in a group share the same *contract.attribute* (e.g. contract identifier). In this case various contractual obligations specified in *the contact* between a mailer and a postal operator (e.g. minimal number of mailing submissions required from the mailer during a given period of time to meet postage discount requirements) can be automatically verified using computerised information contained within SMS.

All submission groups must be uniquely identifiable within the context of a given application.

The mailing submission is the interface point between the mailer and postal processes. The mailing submission is the only set of mail units that is viewed as a unit both by the mailer and by the postal operator. Mailing submission identifier must be created by the mailer (or its authorised agent) according to the postal operator's regulations. As a result, the information sent by the mailer to the postal operator is organised to reflect and describe each submission. This information is defined as the *statement of mailing submission* (SMS). It is assumed that for most practical purposes the SMS is an electronic document containing computerised information. The organisation of information in the SMS is the primary object of this specification.

The following diagram illustrates the relationships between mailings, mailing submissions, submission groups and induction units. The diagram shows three mailings, A, B and C, each divided into a number of submissions: five (numbered A:1 to A:5), in the case of mailing A, three each in the case of mailings B and C. Submissions A:1 and B:1 are produced on Monday and form one induction unit, handed over for postal processing at the end of the day; submissions A:2, B:2 and C:1 form a second induction unit, and so on. Submission A:4 is finished too late to join Thursday's induction, so is added to that on Friday. Submissions A:3, A:5, B:1 and C:2 form a Submission Group 1. They are grouped together because they were submitted by the mail submitter on behalf of a mailer that is different than other mailers involved in Mailings A, B and C and thus must be accounted for separately from other submissions.

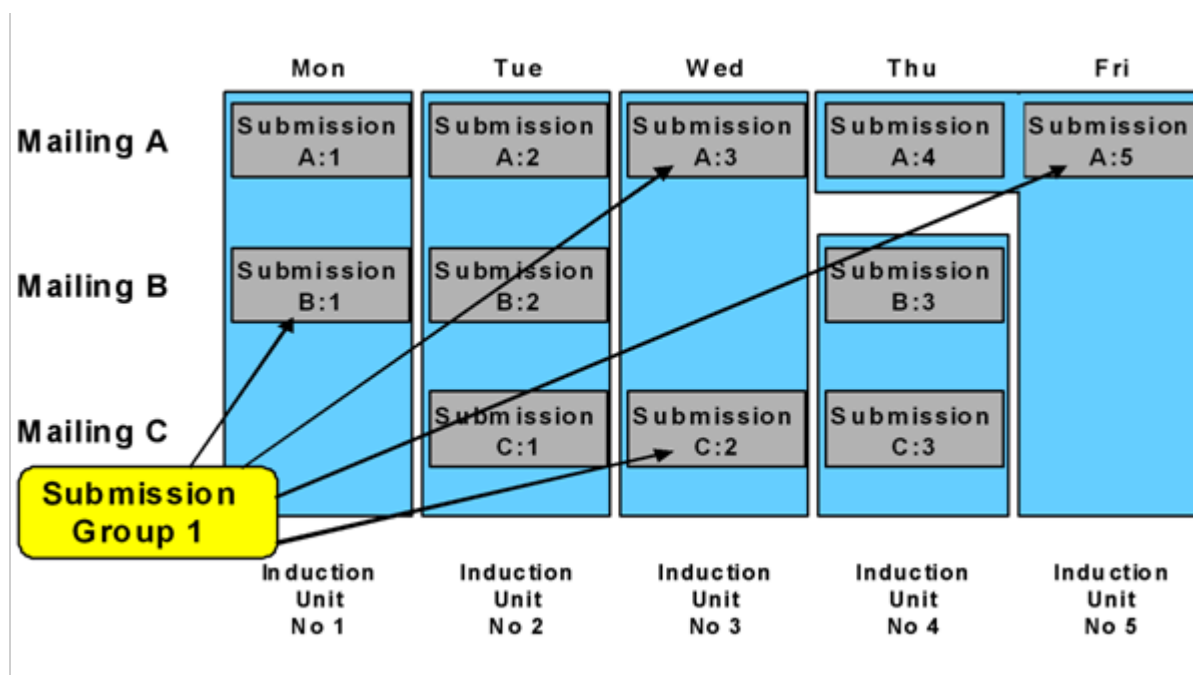


Figure 2 – Relationships between mailings, submissions, submission groups and induction units

The mapping between the internal production processes of the mailer (and other possible parties in the mailer's domain involved in mail production, finishing and induction) and submissions are typically maintained by the mailer and is outside of the scope of the present specification, as having no significance to the postal operator.

The SMS is created primarily for use by the postal operator or its authorised agents since it is the postal operator who is the recipient of the information. The mailing submission is the unit of analysis for financial operations and marketing organisations of the postal operator.

The SMS supports the process of mail acceptance and as a result, is used to detect discrepancies between the attributes of actual mail units as determined by the postal operator during the acceptance process and the information provided by the mailer or its agents in the form of the SMS. Additionally, the SMS is used to document discrepancies. Handling the resolution of discrepancies between the information contained in the SMS and the information obtained from the physical examination of the mailing submission corresponding to the SMS is outside of the scope of the present specification, as it is a matter of policies and procedures.

From a mailer viewpoint mailing submission consists of mail units that are hierarchically organised, for example into letters, trays of letters, various receptacles containing trays of letters etc. These mail units typically have directly measurable characteristics (attributes).

It should be noted that directly measurable characteristic means that the characteristic of the mail unit can be obtained by a direct measurement as opposed to the computation (e.g. weight of an aggregate can only be computed as the sum of the weights of its component mail units, while the weight of a mail unit is typically directly measurable).

All mailing submissions must be uniquely identifiable within the context of a given application.

5.4 Informational objects

This clause provides a detailed explanation concerning various informational objects that form the entity-relationship model of the mail communication system.

5.4.1 Mail unit attribute

Mail unit attribute is a central concept in the entity-relationship model describing a mail communication system. All mail units (including mail items) are fully characterised by their attributes. Mail unit attributes can be either primary or derived (composite). Values of the primary attributes are usually stored, while values of the derived attributes are usually computed when needed. Values of the primary attributes are either directly measured or assigned, while values of the derived attributes are computed from the values of other primary or composite attributes.

Mail unit attributes are always referred to by name. Since all mail unit attributes can be represented by a data value, a pair (mail unit attribute name, mail unit attribute value) contains all application-required information for a given attribute. For brevity, the pair (mail unit attribute name, mail unit attribute value) is frequently referred to as the *name-value pair*.

The definition of the mail unit attribute is not constructive in the sense that it does not allow for a constructive test that would determine whether a given object related to the mail unit is in fact the mail unit attribute. Mail unit attributes are empirically selected, listed, classified and explained in more detail in UPU M33 standard. The list of mail unit attributes is a living list and is open to additions, changes and deletions as experience in using the concept mail unit attribute evolves.

All mail unit attributes have initial or “null” value. Value of a mail unit attribute is set to “null” value when there is no available information as to the actual value of the attribute.

Different types of mail units have different attributes, although some attributes characterise mail units of all types. For example, mail items such as letters could have ink colour used to create a destination address and envelope substrate colour as their single valued attributes, while compound mail units such as pallets may not. On the other hand all mail units have a weight as their attribute.

The value of a mail unit attribute is a function of time. However, the time itself is not an attribute of mail unit, but rather a parameter on which some mail unit attributes are dependent. In this document time is expressed as a date in accordance with a commonly accepted practice in international standards, namely in the following

format yyyy-mm-dd-T:HH:minmin:ssZ, where “yyyy” is the year, “mm” is the month, “dd” is the day, “HH” is the hour, “minmin” is the minute, “ss” is the second etc.

The mail unit attributes could come from a variety of sources, for example: mail unit itself or a database of information related to the mail unit. Some attributes may have the same nature, but originate from different sources (e.g. the destination address information as present on the mail unit (printed) and the destination address information stored in a postal database). The trustworthiness of mail unit attribute value is a function of its source, communication channel and an ability of the party concerned with the veracity of the information to compare values of attributes obtained from multiple sources.

Mail unit attributes fall into two broad categories, attributes that are time and process dependent and all other attributes. A prime example of a time-dependent attribute is the mail unit location, which is the fundamental attribute of track and trace application.

The attributes could be inherent or assigned. An example of an inherent attribute is the attribute “type” that takes the value of “letter”, “postcard”, “tray”, “roller cage”, “sack”, “palette”, transportation unit, etc. (these values are usually codified and published in a commonly accessible code list “mail unit type code list”). Another example is the attribute “position at the time of the last observation”. It signifies when and where the mail unit was last observed.

Other examples of inherent attributes are “weight”, “dimensions” and general physical characteristics such as colour.

It should be mentioned that the actual values of weight, dimensions, and other inherent mail unit attributes are rarely known with absolute certainty and precision.

Mail units usually carry a variety of markings containing data elements required for their processing and delivery. These markings include destination and origination addresses, digital postage mark, various endorsements (e.g. “par avion”), tracking identifier, special service indicator, etc. Location, size and other characteristics (e.g. print quality defects) of markings present on mail units are examples of assigned mail units attributes as they are in essence “assigned” either by the mail creator or by the consolidator or by the postal operator during mail creation or processing.

Examples of commonly encountered mail unit attributes are:

- mailunit.acceptance-location;
- mailunit.original-delivery-address;
- mailunit.originator;
- mailunit.payer;
- mailunit.return-address.

These and many other mail unit attributes are defined in UPU M33 standard.

5.4.2 Mail receptacle attribute

The concept of mail receptacle attribute allows the expression of basic physical parameters that are common to all receptacles. These include type, weight, dimensions, nominal capacity, construction material, handling constraints and the like. Examples are:

- mailreceptacle.weight;
- mailreceptacle.dimensions;
- mailreceptacle.nominal-capacity;

- mailreceptacle.construction-material;
- mailreceptacle.handling-constraints.

5.4.3 Aggregate attribute

Similar to mail units, aggregates are fully characterised by their attributes. Most of the comments concerning the concept of mail unit attributes in 5.4.1 are also applicable aggregates. The fundamental difference between the concept of mail unit and aggregate is the fact that an aggregate cannot be constrained to form a physical unit and therefore certain attributes applicable to mail units are not applicable to aggregates. A prime example is the (single) value of the attribute mailunit.location at a given moment in time. Another example is a (triple) value of mailunit.dimensions.

Examples of commonly encountered aggregate attributes are:

- aggregate.application.name;
- aggregate.component;
- aggregate.originator;
- aggregate.accounting-method;
- aggregate.component.mailunit.ID.

These and many other aggregate attributes are defined in UPU M34 standard.

5.4.4 Aggregate catalogue

The concept of the aggregate catalogue is motivated by the need to distinguish between the names and the values of different attributes considered in entity-relationship models. When attributes of a subset of mail units included in the catalogue of a aggregate acquire values in the context of a particular application, the resulting informational object becomes a statement. For example, when the application is a submission of mail, then the corresponding informational object is the statement of mailing submission.

5.4.5 Statement of mailing submission

The statement of mailing submission is an informational object that contains all information describing physical objects (aggregate) defined as a mailing submission. The following table provides the mapping between the physical world of mail units and aggregates and the world of informational objects that represent physical world in computer data models (e.g. in entity-relationship models).

Physical world	Description (Information)
— aggregate	— catalogue of aggregate
— mailing submission	— statement of mailing submission
— induction unit	— statement of induction unit

Statements of mailing submissions must be uniquely identifiable within the context of a given application.

5.4.6 Electronically exchanged message

The concept of an electronically exchanged message is a useful generalization for a variety of computerised documents that are commonly encountered in a mail communication system. Many application requirements

are relevant to all EEMs and not just specific types, such as a statement of mailing submission. For example, communication channel security requirements may be applicable to many or all EEMs.

Electronically Exchanged Messages may be sent and received through electronic communication networks, public or private, as well as through portable electronic media such as CD ROMs, magnetic diskettes, tapes and machine-readable documents. Examples of EEMs include statement of mailing submission (SMS) and in general, a statement of aggregate.

All EEMs must be uniquely identifiable within the context of a given application.

5.4.7 Observation

Observation is one of the most important informational objects defined in this document. It contains all recorded (or stored) information about a mail unit at a given date. A collection of observations provides a description of a mail unit progression through the mail communication system at discrete moments in time. The observed information is stored and/or communicated in a data structure referred to as the observation record. There could be multiple records of the same observation. The observation record does not reflect the method used to obtain information contained in the record. The notion of how observation information has been obtained is reflected in the concept of observation attribute explained below.

There are circumstances when the value of a mail unit attribute cannot be captured with complete certainty. In this case the value may be treated as a random variable with a known or unknown distribution, and parameters of this distribution such as its expected value and standard deviation can be reported instead of the absolute value of the attribute.

As all other object observation considered in this document must be uniquely identifiable within a given application.

Formal description of the observation can take a form.

$$\text{Observation [mailunit (ID)]} = \{(A1), (A2), \dots, (AN)\} / \text{Date},$$

where *mailunit (ID)* is an identifier for the mail unit that is being observed and *(A1), (A2), ..., (AN)* are values of the attributes *A1, A2, ..., AN* respectively taken at the moment of time defined by the date (e.g. yyyy-mm-dd-T:HH:minmin:ssZ).

5.4.8 Observation attribute

The purpose of the observation attribute is to collect important information that is not captured in the observation record. Examples of observation attributes are values describing conditions under which the observation (mail unit attribute values) was taken and identity, role and attributes of the party or agent responsible for actions taken at the date of the observation. The identity of the mail sorting machine (agent) that scanned a given mail unit identifier, as well as its scanning resolution and illuminating condition provide useful examples of observation attributes.

The date of the observation together with its identity and the identity of the mail unit being observed are the only unconditionally required attributes of the observation. This means that these three data elements must always be present in any observation.

There are multiple ways to identify the party responsible for the actions taken at the time of the observation. It may be identified through its assigned identifier, its postal address, its location expressed in terms of its geographical coordinates, or all of the above. The role of the party responsible for the action (party attribute named "role") can be codified (see for example UPU code list 153).

5.4.9 Expectation

The purpose expectation is to allow for a formal expression of needs and desires of concerned parties regarding mail units when these mail units are not under direct control of such parties. Expectations that are

created by customers and communicated to postal operators serve to specify desired services and identify discrepancies between expected and performed services.

Expectation also allows for a formal definition of (custom-tailored) non-conditional services and forms a special case of postal product definition. Conditional services are services when the type of the information that could be made available to customers is dependent on the actions taken by the postal operator or location of the mail unit. For example, if a mail unit could not be delivered due to the absence of the recipient, the information about such an event, including information describing present location of the mail unit, could be made available to the sender.

Unlike observations, expectations can be defined over a range of dates. The amount of information held in a record for an expectation defined over a date range is larger than the amount of information held in a record for an expectation defined for a date.

The expectation information is stored and/or communicated in a data structure referred to as the expectation record. There could be multiple records for the same expectation. The expectation record contains anticipated attribute values, the consistency of which, however, cannot be ascertained in the same way as consistency of attribute values in observations.

All expectations considered in this document must be uniquely identifiable within a given application.

NOTE There is no analog to observation attributes in the context of expectations because it is not reasonable to assume that customers or other parties would anticipate, know or impose conditions, parameters or identities for actual measurements of mail unit attribute values.

5.4.10 Postal product/service

The main purpose of a formal definition for a postal product is to provide a set of automatically executable instructions for mail creator and postal operator aimed at smooth delivery of postal products. How then, can a postal product/service be formally defined using a set of concepts and definitions introduced in this standard? A straightforward and somewhat naïve approach would be to look at existing services and identify and generalise their defining characteristics. For example, a period of time elapsed from the deposit/induction of the mail item to the moment of its delivery (however delivery is defined) is one of the most common parameters of the service definition. In many European countries, “first” class mail is defined by this parameter when it is equal to “D+1”, where “D” is the day of induction. In addition, the first class mail service is also defined by the rule governing exception processing, namely that the first class mail service requires return of the undeliverable mail item to the mail item originator or its authorised agent or agents. Further, other parameters such as “security” or “guarantees” can be introduced as additional features of the service. A prime example of these features is “track & trace” information that is expected to be supplied to the originator of the mail item or entity or its agent(s). Still further parameters that could be specified by the originator are mail item or entity pick-up time, processing constraints (e.g. registered mail) and the like. Yet still further parameters reflect the nature of the mail unit itself as it affects the cost and salient characteristics of its processing within the postal distribution network (e.g. size, weight, worksharing level). This suggests that a comprehensive definition of the postal product capable of accommodating a broad variety of existing and future products should be specified in terms of rules that operate on mail unit attributes (defining mail unit) and observations (defining information reflective of postal processing and their distribution and access), where mail unit attributes are understood very broadly. Finally such rules should be agreed upon between postal operators and customers in such a manner that products offered by operators and products requested by customers should match and cause no confusion on either side. Thus the definition of the postal product is an agreed-upon set of rules operating on the values of the mail unit attributes governing both actions to be taken on the mail unit and communication of observations to all authorised parties. Several important observations are as follows.

The domain for the rule defining the product in terms of attributes is a subset (possibly proper subset) of mail unit attributes and their values. The domain is specified by the rule itself.

The rules operating on the values of mail unit attributes could be expressed implicitly or explicitly. Some simple rules (and their corresponding postal products) can be expressed directly in terms of the concept of expectation defined in this standard. In the case of traditional postal products the rules are published together

with their corresponding prices and referred to by conventional classification such as first class, second class or express mail service. In this case, the rules are implicitly referenced by putting endorsements on mail units (for example: first class mail) and the rules are selected and controlled by the service provider (no negotiation is involved). As an example, the first class mail service is defined as a rule operating on the values of two mail unit attributes, namely: `mailunit.original-delivery-address` and `mailunit.class-of-service`. By the default agreement, the rule is to deliver the mail unit to the location specified by the attribute `mailunit.original-delivery-address` within a specified time period (e.g. D+1). Another example is first class mail service with track and trace. The set of values for the mail unit attributes for the rule governing actions taken on the mail unit consist of `mailunit.original-delivery-address` and `mailunit.class-of-service` and `mailunit.customer-applied-ID`. The set of mail unit attributes for the communication of observations consists of all values of the attributes `mailunit.location` and `mailunit.process`. The rule is to deliver the mail unit to the location specified by the value of the attribute `mailunit.original-delivery-address` within a specified time period and make available to the mail unit originator, (or its agent(s) or other authorised parties) values of the `mailunit.location` attribute whenever and wherever possible.

A more complex example of a postal product is a product defined by the following set of requirements:

- mail item is required to be delivered on a given date (date-certain delivery);
- postal operator is required to provide mail originator with delivery confirmation in terms of an observation taken at the delivery of the mail item into recipient mailbox;
- postal operator is required to provide mail originator with address correction information in the case when the destination address as presented on the mail item contains errors;
- postal operator is required to provide mail originator with information describing print quality defects with regard to the mail item destination address and digital postage mark.

In this case the set of mail item attributes that are needed for the product description are:

- `mailitem.ID`;
- `mailitem.delivery-date`;
- `mailitem.originator`;
- `mailitem.original-delivery-address`;
- `mailitem.replacement-delivery-address`;
- `mailitem.original-delivery-address-print-quality-defect`;
- `mailitem.dpm-print-quality-defect`.

The observation of the last four attributes and the `mailitem.ID` is to be taken at the time of mail item processing (for example by a mail sorting machine) and the observation of the first two attributes is to be taken at the time of mail item delivery into a recipient mailbox.

Thus the rule defining the product is to deliver the mail item to the location defined by the value of the `mailitem.original-delivery-address` (if deliverable) or by the value of `mailitem.replacement-delivery-address` at the date defined by the value of `mailitem.delivery-date` and send information contained in the observations described above, including the value of `mailitem.replacement-delivery-address` (if it is not NULL value) to the party defined by the value of `mailitem.originator`.

It is conceivable that in the future, postal service providers will negotiate postal products with their customers and in this case the subset of mail unit attributes and their values and the rules might be explicitly communicated using either a mail unit itself as a carrier of information or a computer data structure referenced by a pointer on the mail unit.

The mail unit is sometimes implied (not explicitly associated) with the postal product, such as in the case of the address correction service which may not involve actually posting a mail unit into a postal distribution network. In this case the service is performed by the postal operator by correcting computerised address information provided by a would-be mailer without actual processing of the mail unit.

5.4.11 Postal product/service attribute

Postal product attribute is a useful informational object designed to capture information that is not captured in the postal product object. Postal products can also be codified. In this case, the code for the product is a postal product attribute that takes its value from a code list. Price for the postal product can also be considered as its attribute. Since the price is somewhat arbitrary and in principle can be negotiated, it makes sense to keep the price out of the product itself. It also allows for negotiations between postal operators and their customers without changing basic data structures defining products. Similarly, financial and technical details (such as refunds conditions, expiration date, allowed induction points and times etc.) of the contract between a mailer and a post can be considered as attributes of negotiated services as well as attributes of the contract. Thus, the concept of postal product attribute allows the system to separate informational needs of postal operations from informational needs of postal finance and marketing while simultaneously accommodating similar needs of mail senders.

5.4.12 Contract and contract attributes

Mailers that have reasonably large and regular mailing submissions usually enter into an agreement (contract) with a postal operator (or operators) that defines their mutual financial and service requirements and obligations. The contract specifies the minimum amount of mail to be submitted, pricing and applicable discounts, service to be provided, methods of verification, dispute resolution and similar parameters and conditions. Contracts could be highly specific for a given mailer and postal operator. For the purpose of SMS specification, the contract is understood as an informational object containing all computerised parameters and conditions of the agreement that can be referenced in the SMS. Such computerised parameters and conditions are referred to as contract attributes and may include a contract identifier, contract type, contract legal status and similar attributes.

Contracts must be uniquely identifiable within the context of a given application.

5.5 Mailer domain process

Processes in the integrated mail communication system must be linked or interfaced through appropriate exchanges of information. Thus, all processes that are referred to or considered in the present standard are viewed as computer-driven where computers collect relevant process information. Other processes, although always present in mail communication systems, do not result in computerised information that can be exchanged between parties involved and therefore are not considered here. Oval blocks in the diagrams representing processes in the three principal domains indicate points in the processes where informational objects described in this standard can be collected, formatted and communicated.

In mail communication systems, mail units are the subjects of continuous processes throughout their life-cycle (from inception to discard). The processes comprise both physical processes (e.g. mail unit reorientation as a result of facing or a mail unit transfer from one location to another) and information processes (e.g. capturing and interpretation of data present on mail unit).

From the point of view of the mail communication system reference model, processes, both physical and informational, can be represented and described as a series of events, each of which is described by a set of observations.

Mailer domain process is described here in the most generic terms and does not take into account many variations and exceptions that take place in practical, actually encountered environments. Real processes in the mailer domain are always country, application and volume dependant, and could not be described in any detailed fashion within the scope of the present standard. Some sub-processes (or activities) sketched here happen only in a large volume mailer environment and are highly automated and computer-driven, while some others are present in almost any environment, but might be performed in a totally manual manner without any

equipment at all. The purpose of providing the following description is to establish terminology and the very basic common features for some very commonly encountered mailer domain processes.

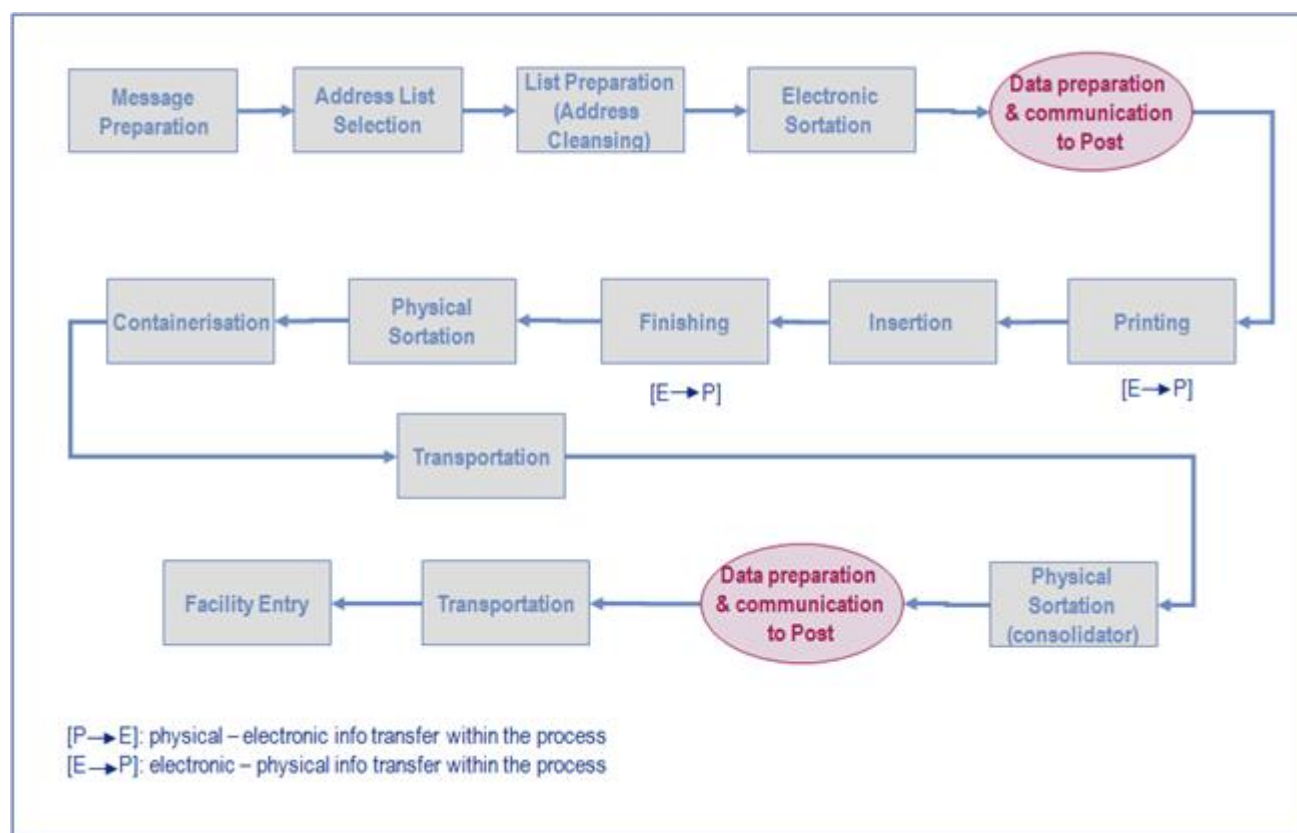


Figure 3 – Mailer domain process

5.5.1 Message/content preparation

Message or content is information physically represented on a substrate or an object that is being sent by the mail unit originator to its recipient. Message/content is the sole reason for communication. Postal standards are typically not concerned with messages, nevertheless, message preparation is a critical part of the mail preparation process and may affect subsequent steps. Message is usually also linked and coordinated with the recipient mailing address.

5.5.2 List selection

The process of address list selection is typical for relatively large mailings. In the case of small mailings or a single mail unit the process of list selection is a simple process of recipient (destination) address selection for a given mail unit. As mentioned, the destination address has to be coordinated with the content of the mail unit.

5.5.3 List preparation

Address list preparation usually involves a process of quality control in order to avoid sending mail units that cannot be delivered or can be delivered only with additional expenses usually associated with exception processing. The process of address cleansing is executed when a party (e.g. postal operator) maintains a database of correct addresses and made available to mailers or their agents.

5.5.4 Electronic sortation

Electronic sortation is common when there is a discount offered to mailers for submitting their mailings already sorted (organised in a certain order that allows it to bypass certain processing steps that are otherwise necessary). This discount is sometimes referred to as a work-sharing discount. Electronic sortation is performed when mail units can be physically created without constraints concerning their “natural” order of creation. In some cases, mail units have to be produced in a specific sequence (e.g. according to a recipient account number or identifier) that may interfere with electronic sortation.

5.5.5 Printing

The process printing typically involves printing message(s) as well as printing the destination address. Sometimes when “window” envelopes are used, both the message and destination address are printed in one step. The printing process is typical for business-originated mail. Messages and addresses for mail units originated by individual mailers and households are sometimes handwritten, which may cause manual processing on the part of the postal operator.

5.5.6 Insertion

Insertion refers to a paper-handling mechanical process whereby mail units are assembled and inserted into a carrier envelope.

5.5.7 Finishing

Finishing typically involves printing a Digital Postage Mark (DPM) (sometimes referred to as an Indicium) and additional information such as Facing Identification Mark (FIM), mailer-selected advertising slogans etc. Finishing may require determining the mail unit rating parameters such as its weight or dimensions that are indicative of the tariff (postal rate or charge) to be paid by the payer for products/services that are expected to be rendered. The main purpose of finishing is to enable mailers to have effective access to postal products.

5.5.8 Physical sortation

The main purpose of physical sortation is to obtain a discount or better and faster service from the postal operator. Physical sortation can be performed by a mail originator or its agent (for example a consolidator or a contractor) depending on whether the mail originator has sufficient mail volume or required equipment and expertise. Physical sortation is more cumbersome and expensive than electronic sortation and is performed only when electronic sortation is not possible, for example when mail units created independently by different processes are merged or when mail units have to be prepared in certain order.

5.5.9 Containerisation

Containerisation is a necessary step since mail units could not be transported without containers. Containerisation involves the use of multiple receptacles that are country and application dependent.

5.5.10 Transportation

Transportation is a generic term. The nature and the sequence of specific activities comprising “transportation” may vary from mailer to mailer and is affected by the rules of induction that are country and postal facility dependent. Transportation usually involves loading and unloading of transportation vehicles.

5.5.11 Induction

The process of induction is common to both mailer and postal domains. The process of induction or entry occurs when an aggregate or a mail unit is presented for induction into the postal operator distribution network by the mail submitter. The process of induction includes the process of mailing submission verification (typically performed by the postal operator) that ensures that the submission complies with postal revenue protection and operational requirements. The process of induction typically applies only to controlled

acceptance or controlled entry mail (CAM or CEM). The verification normally involves payment (or accounting) accuracy and mail quality check. The process of induction may result in acceptance or rejection of the mailing submission in part or as a whole. Acceptance of a mail unit or an aggregate may involve surcharges that are required to be paid by the submitter to the postal operator if the submission is found to be non-compliant with postal requirements.

5.6 Interfaces

Interfaces between mailer, recipient and postal domains are shown in Figure 1. All interfaces can be divided into two broad categories, namely interfaces that are enabled by physical mail units and electronic interfaces that are usually enabled by connecting computers in the mailer, recipient and postal domains through a private or public communication network (such as the internet).

Interfaces that make use of physical mail units are represented by the information printed or written directly on these mail units or attached to them via labels that are in turn either imprinted (machine printed) or inscribed with information (hand written). It is also possible to use specially designed electronic devices such as RF tags to exchange information between domains via mail units. In all cases, it is convenient to refer to the interface that is enabled by the mail units themselves as “material interface channel” or simply “material channel”.

Cost effective representation of information using mail units requires that information density should be sufficient to encode all application-required information for all classes of mail units, all business applications and all postal products. This should be accomplished for a broad variety of printing substrates. Effective automated capture of the information off mail units implies reliable scanning and interpretation of data present on said mail units.

It should be noted that electronic interfaces between domains could be implemented not only via electronic public communication networks such as the internet but also through portable electronic media such as magnetic disks, CD/DVD memories, flash memory etc. Electronic interfaces can be passive or active. A passive interface can be exemplified by a service provider (e.g. a postal operator) that allows access to information via a web service using browser software. An active interface can be exemplified by the direct transfer of information between domains using for example e-mail or FTP protocol when information is delivered to an explicitly identified recipient's computer. The electronic interface channel is becoming an increasingly important aspect of the mail communication system by enabling true integration of the entire mail communication network.

Specific protocols, message content and structure are outside of the scope of a current standard. They are addressed in UPU and CEN standards dedicated to specific important applications (e.g. statement of mailing submission) and listed in the bibliography. This standard defines only a generic term of electronically exchanged message in order to address issues related to all such messages, for example security services (authentication, data integrity, privacy and no-repudiation).

NOTE 1 Although hand written information (such as address data) is frequently encountered in mail communication and can also be considered as a part of material interface it is typically not suitable for the effective exchange of information between domains and therefore excluded from the definition above.

NOTE 2 Electronic interface between domains can also be implemented via portable electronic media such as magnetic disks, CD/DVD memories, flash memory etc., however, these interfaces are less effective and are becoming increasingly unpopular.

6 Statement of mailing submission (SMS)

This clause describes the content of the SMS organised as a communication message, its format and communication protocol recommended for the transfer of SMS message from mailers to postal operators. It also provides a very brief description of recommended communication channel security requirements and gives basic references. The communication channel security is not specific to mail communication applications and is treated here, mainly as a necessary reminder to the reader, that all data exchanges through a public communication network have to be treated with appropriate caution.