



**SLOVENSKI STANDARD**  
**SIST-TP CEN ISO/TR 6026:2023**

**01-januar-2023**

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**Elektronsko pobiranje pristojbin - Predštudija o uporabi informacij o registrskih tablicah vozil in tehnologij za samodejno prepoznavanje registrskih tablic (ANPR) (ISO/TR 6026:2022)**

Electronic fee collection - Pre-study on the use of vehicle licence plate information and automatic number plate recognition (ANPR) technologies (ISO/TR 6026:2022)

Elektronische Gebührenerhebung - Vorstudie zur Nutzung von Kennzeicheninformationen und automatischer Kennzeichenerkennung (ANPR) Technologien (ISO/TR 6026:2022)

Perception de télépéage - Pré-étude sur l'utilisation des informations de la plaque d'immatriculation du véhicule et la technologie de la lecture automatique des plaques minéralogiques (LAPI) (ISO/TR 6026:2022)

**Ta slovenski standard je istoveten z: CEN ISO/TR 6026:2022**

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**ICS:**

03.220.20	Cestni transport	Road transport
35.240.60	Uporabniške rešitve IT v prometu	IT applications in transport

**SIST-TP CEN ISO/TR 6026:2023**      **en,fr,de**



TECHNICAL REPORT

CEN ISO/TR 6026

RAPPORT TECHNIQUE

TECHNISCHER REPORT

September 2022

ICS 03.220.20; 35.240.60

English Version

## Electronic fee collection - Pre-study on the use of vehicle licence plate information and automatic number plate recognition (ANPR) technologies (ISO/TR 6026:2022)

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This Technical Report was approved by CEN on 12 August 2022. It has been drawn up by the Technical Committee CEN/TC 278.

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## European foreword

This document (CEN ISO/TR 6026:2022) has been prepared by Technical Committee ISO/TC 204 "Intelligent transport systems" in collaboration with Technical Committee CEN/TC 278 "Intelligent transport systems" the secretariat of which is held by NEN.

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TECHNICAL  
REPORT

ISO/TR  
6026

First edition  
2022-08

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**Electronic fee collection — Pre-study  
on the use of vehicle licence plate  
information and automatic number  
plate recognition (ANPR) technologies**

*Perception de télépéage — Pré-étude sur l'utilisation des  
informations de la plaque d'immatriculation du véhicule et la  
technologie de la lecture automatique des plaques minéralogiques  
(LAPI)*

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Reference number  
ISO/TR 6026:2022(E)

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Published in Switzerland



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## Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 278, *Intelligent transport systems*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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## ISO/TR 6026:2022(E)

### Introduction

This document endeavours to foster a common understanding in the context of electronic fee collection (EFC) systems of the use of vehicle licence plate information, and of automatic number plate recognition (ANPR) technologies.

This document notably seeks to advance the common understanding and definitions in the following areas:

- information associated with the licence plate number (LPN);
- information exchanges over open interfaces;
- outline of specification of exchanges between actors, notably the toll service provider (TSP), the toll charger (TC), vehicle registration authorities, etc;
- technologies regarding the ANPR.

The outcome is intended to contribute to more effective and efficient EFC schemes using vehicle LPN, obtained by means of ANPR technology and any associated information (including make and model) as a primary means to identify the user via the LPN, or a complementary means to augment the reliability and the robustness of their dedicated short-range communication (DSRC)-based or global navigation satellite system/cellular network) (GNSS/CN)-based systems (including degraded mode, trip reconstitution, etc).

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# Electronic fee collection — Pre-study on the use of vehicle licence plate information and automatic number plate recognition (ANPR) technologies

## 1 Scope

This document provides an analysis of the use of licence plate number (LPN) information and automatic number plate recognition (ANPR) technologies in electronic fee collection (EFC), through the description of the legal, technical and functional contexts of LPN-based EFC. It also provides an associated gap analysis of the EFC standards to identify actions to support standardized use of the identified technologies, and a roadmap to address the identified gaps.

The gap analysis in this document is based on use cases, relevant regulations, standards and best practices in the field of EFC, based on the European electronic toll service (EETS)<sup>[27]</sup> model.

Examples of licence plate number (LPN)-based tolling schemes are given in [Annex A](#).

## 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.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 3.1

#### 3 dimensional

#### 3D

computer graphics that define an object by its width, length and depth

[SOURCE: ISO/TS 23541-1:2021, 3.1.1, modified — Note 1 to entry removed.]

### 3.2

#### automatic number plate recognition

technology to automatically read vehicle registration plates

Note 1 to entry: A vehicle registration plate typically contains the indicator or the code of the country that issued the vehicle registration plate.

Note 2 to entry: Optical character recognition techniques are typically part of the technology associated with automatic number plate recognition.

Note 3 to entry: Automatic licence plate recognition (ALPR) is a synonym to ANPR.

[SOURCE: ISO/TS 17573-2:2020, 3.18, modified — Note 3 to entry has been added.]

**ISO/TR 6026:2022(E)****3.3  
artificial intelligence**

<engineered system> set of methods or automated entities that together build, optimize and apply a model so that the system can, for a given set of predefined tasks, compute predictions, recommendations, or decisions

Note 1 to entry: AI systems are designed to operate with varying levels of automation.

Note 2 to entry: "Predictions" can refer to various kinds of data analysis or production (including translating text, creating synthetic images, or diagnosing a previous power failure). The term does not imply anteriority.

**3.4  
country code**

identification of the issuing country of a licence plate, formatted in accordance with the United Nations Distinguishing Signs of vehicles in International traffic regulation

Note 1 to entry: In accordance with the United Nations Distinguishing Signs of vehicles in International traffic regulation,<sup>[33]</sup> the CC contains 1, 2 or 3 alphabetical characters.

Note 2 to entry: A "human-readable country code" is defined as a licence plate number where human inspection can determine the issuing country from syntax, font and other characteristics of licence plates.

**3.5  
error rate**

ratio between the absolute error and the reference value of all transactions

**3.6  
false negative**

incorrect reporting of a failure when in reality it is a pass

[SOURCE: ISO/IEC TR 29119-11:2020, 3.1.34, modified — Note 1 to entry and Example removed.]

**3.7  
false positive**

incorrect reporting of a pass when in reality it is a failure

[SOURCE: ISO/IEC TR 29119-11:2020, 3.1.34, modified — Note 1 to entry and Example removed.]

**3.8  
false negative error rate**

ratio between the false negatives and the reference value of all transactions

**3.9  
false positive error rate**

ratio between the false positives and the reference value of all transactions

**3.10  
false recognizable error rate**

ratio between the false recognizable transactions and the reference value of all processed transactions

**3.11  
infrared**

optical radiation for which the wavelengths are longer than those for visible radiation

Note 1 to entry: For infrared radiation, the range between 780 nm and 1 mm is commonly subdivided

**3.12  
intelligent transport system**

transport system in which advanced information, communication, sensor and control technologies, including the Internet, are applied to increase safety, sustainability, efficiency and comfort

[SOURCE: ISO/TR 17465-2:2015, 2.2]

**3.13****licence plate image**

digital image on which a vehicle licence plate is visible

Note 1 to entry: A "human-readable licence plate image" is defined as a licence plate image with a human-readable licence plate number and country code.

**3.14****licence plate number**

number of the registration plate of a vehicle

**3.15****manual number plate recognition**

process of determining the licence plate number and country code by human inspection of a digital image

**3.16****on-board unit**

electronic unit on-board a vehicle for performing specific electronic fee collection (EFC) functions and for communication with external systems

[SOURCE: ISO/TS 17573-2:2020, 3.127]

**3.17****optical character recognition**

technique where characters are recognized and converted into binary code

[SOURCE: ISO 12651-1:2012, 4.100, modified — Note 1 to entry removed.]

**3.18****payment means**

means accepted by the service provider, that gives the user the right to use provided services

[SOURCE: ISO/TS 17573-2:2020, 3.134, modified — Example removed.]

**3.19****toll domain statement**

statement setting out the general conditions for European electronic toll service (EETS) providers for accessing a toll charger's toll domain.

Note 1 to entry: The definition is based on the EU directive 2019/520<sup>[27]</sup> on the recast of the European electronic toll service (cf. Article 6(2)).

**3.20****user account**

centrally or on-board stored transport-related service rights of the user in relation to a service provider

[SOURCE: ISO/TS 17573-2:2020, 3.228]

**3.21****vehicle registration authority**

authority responsible for the registration and maintenance of vehicle registers, including details of legal owners

## 4 Abbreviated terms

For the purposes of this document, the following abbreviated terms apply.