



BSI Standards Publication

Electronic fee collection — Image-based tolling systems — Measurable characteristics

National foreword

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Technical Report

ISO/TR 25221

Electronic fee collection — Image-based tolling systems — Measurable characteristics

Perception de télépéage — Systèmes de péage basés sur l'analyse d'images — Caractéristiques mesurables

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Foreword

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This document was prepared by Technical Committee 204, *Intelligent transport systems*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The European Commission Implementing Regulation (EU) 2020/204^[15] on detailed obligations of European electronic toll service providers includes among the allowed tolling techniques: “electro-optical imaging systems at the toll charger’s fixed or mobile equipment at the roadside, providing means for automatic number plate recognition (ANPR), in EFC systems where the installation and use of an OBE is not required.”

ISO/TR 6026, produced by ISO/TC 204 in collaboration with CEN/TC278, identifies necessary areas of standardization for image-based tolling. Activities to revise existing EFC standards to support ANPR technologies have already been started.

It is well known that certified equipment is required, when ANPR is used for purposes other than tolling (for example, limited traffic zones and speed limit enforcement), and that certification activity requires test suites. This area has so far not been addressed in the field of EFC.

Also, while some phases in the process of electronic fee collection can be devised as technology independent, at least the phases of recognition and the identification of vehicles are strictly dependent on the technology used for tolling, so, in the specific case of ANPR, they depend on the ANPR technology.

Some regional standards (for example, UNI 10772) specify procedures for testing the optical and optical character recognition (OCR) capabilities of ANPR systems, but the process chain of EFC is much wider than that.

A study is needed to identify characteristics of image-based systems for tolling to be tested for conformance to specifications and to measure key performance indicators (KPIs).

It is recognized that image-based systems that are suitable for tolling can be used for other purposes. Although such systems are out of the scope of the present document, informative [Annex A](#) is provided with some examples and case studies.

Electronic fee collection — Image-based tolling systems — Measurable characteristics

1 Scope

This document analyses the processes of image-based systems to be used for tolling purposes, with the aim to identify their specific characteristics, and where these characteristics can be observed. The study intends to answer the following questions:

- a) Which are the relevant characteristics of an image-based system used for electronic fee collection (EFC)?
- b) How can these characteristics be specified?

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/TS 17573-2, *Electronic fee collection — System architecture for vehicle related tolling — Part 2: Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/TS 17573-2 and 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 automated number plate recognition ANPR

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 automated number plate recognition.

[SOURCE: ISO 17573-2:2020, 3.18]

3.2 enforcement

means to identify and pursue violators of laws, regulations or rules

3.3 false negative

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

[SOURCE: ISO/IEC TR 29119-11:2020, 3.1.34]