Intelligent transport systems — Management of electronic traffic regulations (METR) —

Part 1:
Vocabulary

~~DTS stage~~

Systèmes de transport intelligents — Gestion des règles de circulation sous forme électronique —

Partie 1: Vocabulaire

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Contents

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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~~document 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).

~~Attention is drawn~~ISO draws attention to the possibility that ~~some of~~ the ~~elements~~implementation of this document may ~~be~~involve the ~~subject~~use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights~~.~~ in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. 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)~~.

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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).

~~This is the first edition of ISO 24315-1.~~

A list of all parts in the ISO 24315 series can be found on the ISO website.

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.

0Introduction

0.1   System overview

The ~~Management~~ISO 24315 series on the management of ~~Electronic Traffic Regulations~~electronic traffic regulations (METR) ~~document series~~ is intended to provide users access to geo-specific, trustworthy, timely, authoritative~~,~~ and machine-interpretable~~,~~ rules relating to traffic and transport~~ related rules~~, enacted by jurisdictional entities, including those who define rules for campuses (i.e.~~,~~ private grounds). This is conceptually shown in ~~Figure 0-1.~~Figure 1.
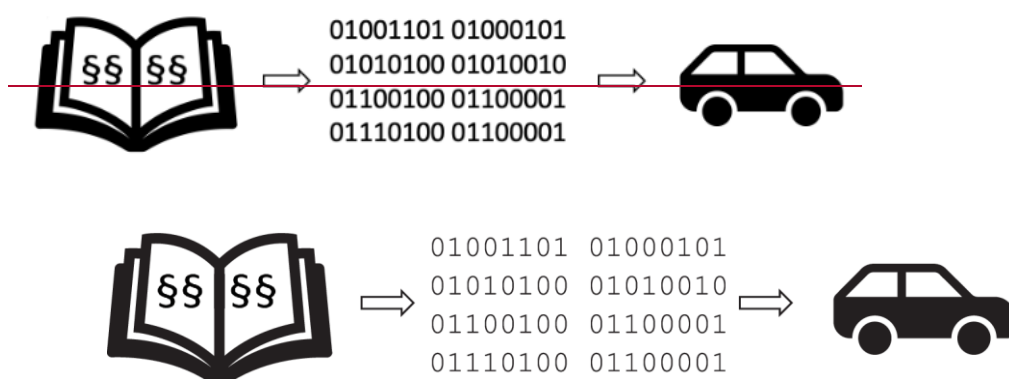
Figure ~~0- ~~1~~ ~~ — METR concept

~~0.1.1~~0.2 Purpose

METR is designed to assist developers and manufacturers of driving automation systems (i.e.~~,~~ automation Levels 1-5) and driver information systems (including those at automation Level 0) to electronically obtain traffic rules to better enable~~:~~ them in:

~~a.~~a)   interacting safely with other road users;

~~a.~~b)   following instructions from law enforcement organizations~~,~~ and those authorized to direct traffic;

~~b.~~c)   maintaining smooth and safe flow of traffic; and

~~c.~~d)   complying with other rules enacted to support legislative policies (such as environmental protection, noise, ~~manage~~ height and weight restrictions, and societal aspects such as market days, fiestas, pedestrian zones, etc~~.). [1].~~).[1]

METR is designed to provide a reference framework for the trustworthy distribution of electronic versions of legal traffic rules~~, however~~. The content and application of ~~the~~these traffic rules is outside of the scope of ~~the METR~~ standards and specifications on METR.

~~0.1.2~~0.3 Flow of information

The general flow of METR information is illustrated in ~~Figure 0-2~~Figure 2 and ~~subsequently~~is described below the figure.
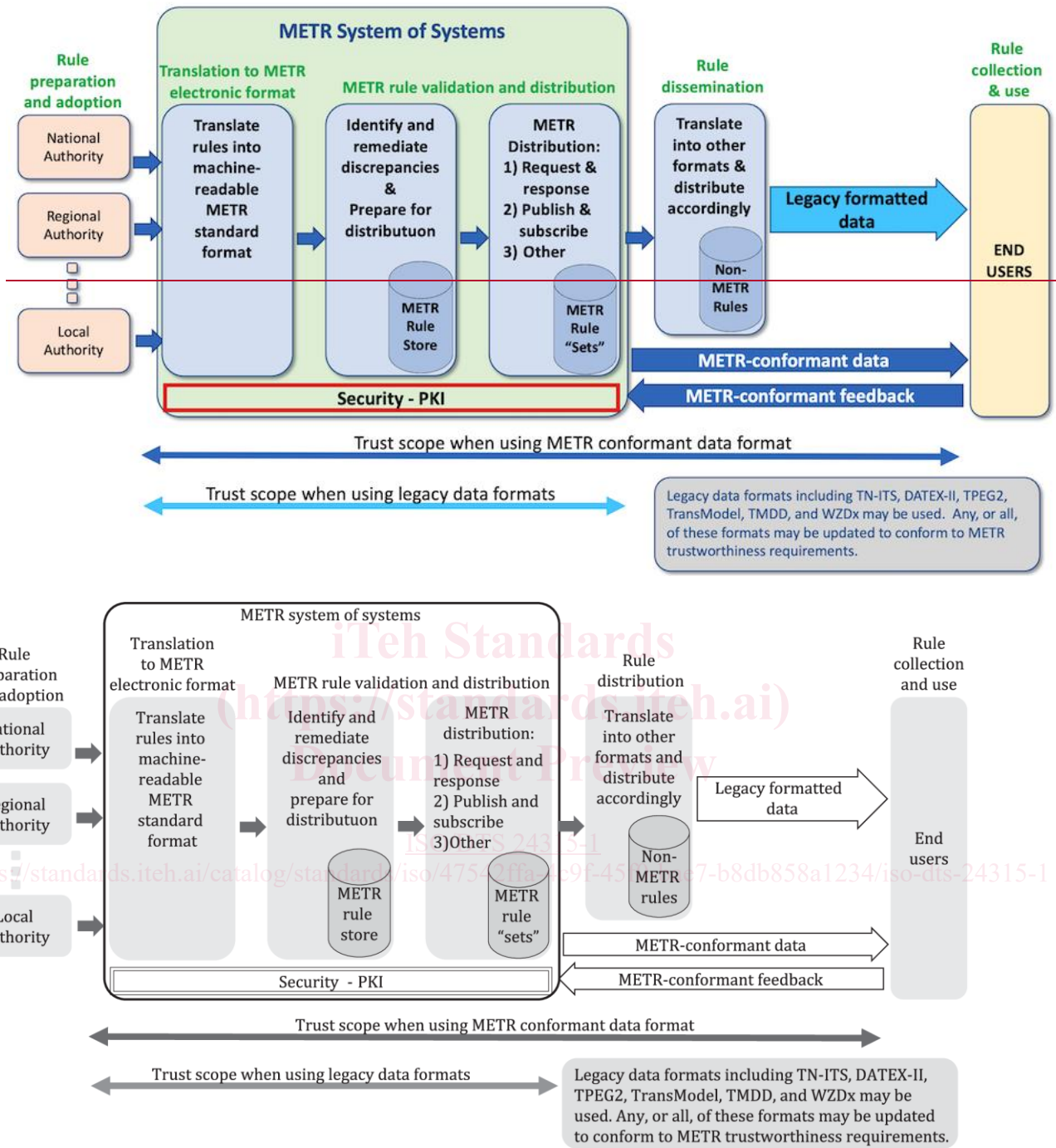
Figure ~~0~~ 2 — METR flow of information

~~a.~~a) METR starts with rule makers defining and enacting rules that are relevant to transport users~~;~~.

~~a.~~b) ~~each~~Each legal rule is translated into a METR rule, which is a secure, standardized electronic representation that includes a digital signature of the rule signing organization~~;~~.

~~b.~~c) METR rules are collected for a geographic area(s) and specific scope(s~~);~~).

~~c.~~d) ~~rules~~Rules are distributed to METR users based on their needs~~;~~.

d.e) ——METR users become aware of the METR rules, verify their authenticity, and respond appropriately; and.

e.f) ——asAs needed, METR users can submit discrepancy reports to a discrepancy handler for investigation and correction.

0.1.30.4 Graphical overview

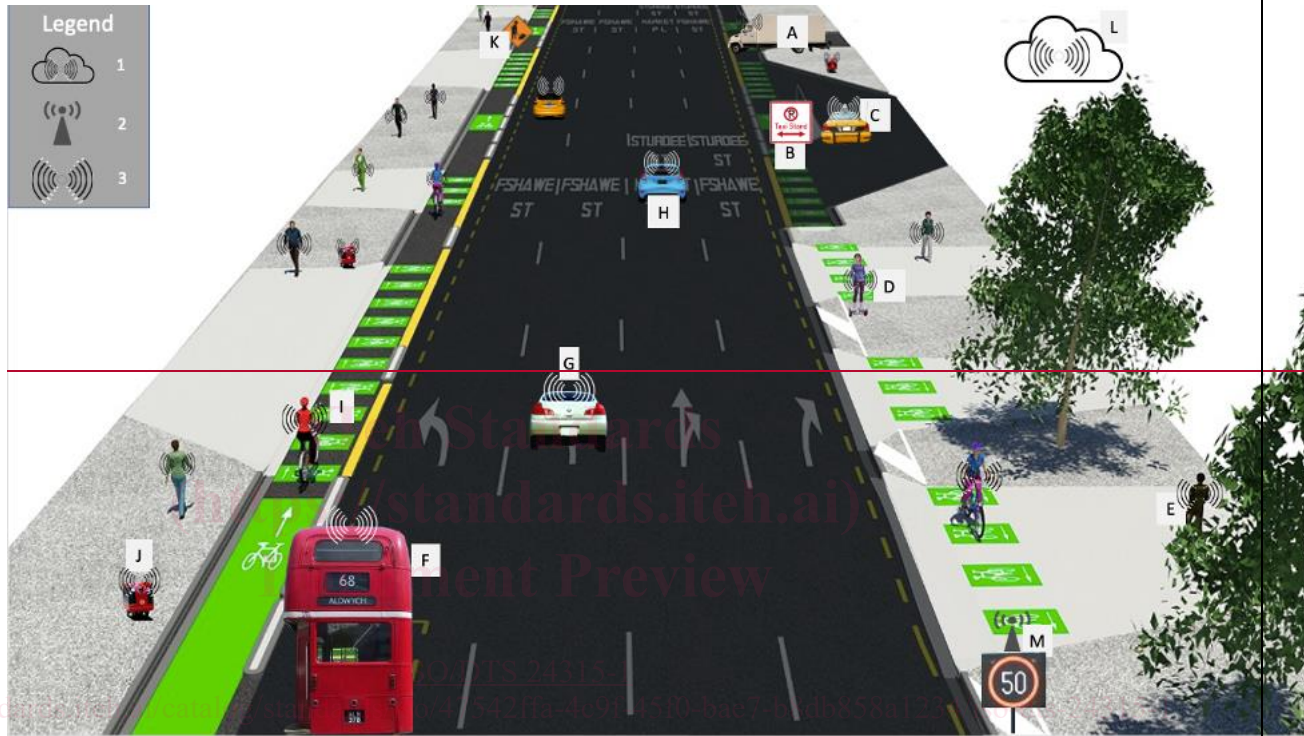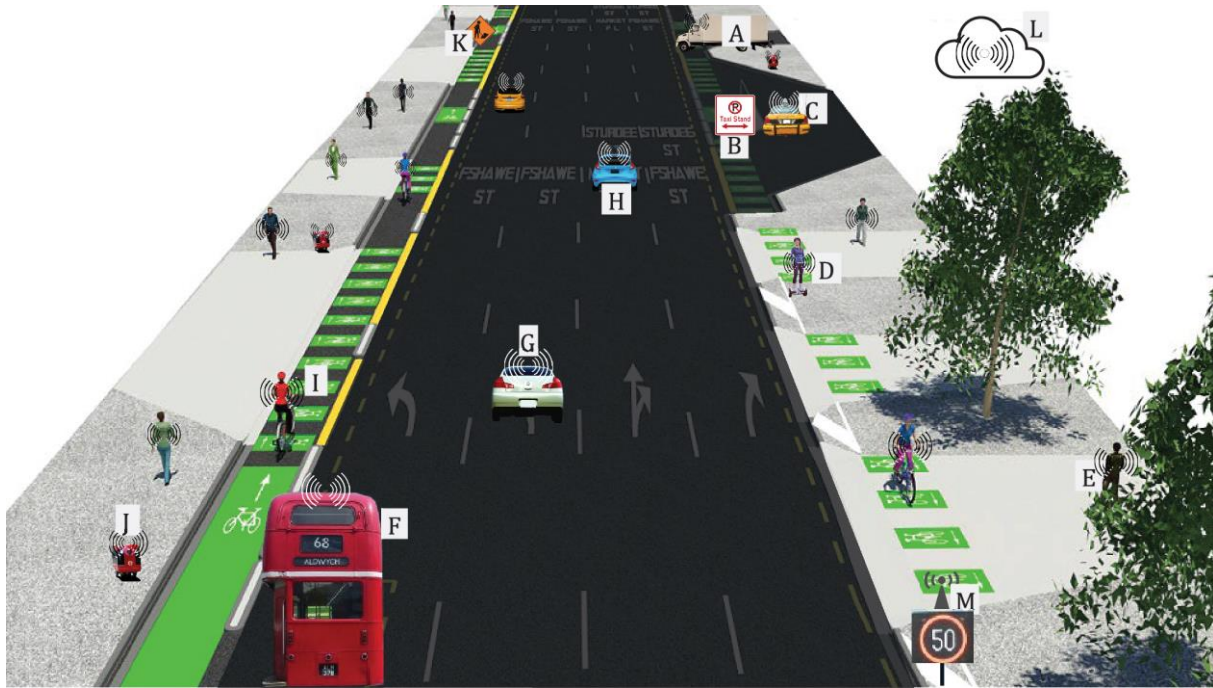Figure 0-3Figure 3 provides an overview of the data and devices included within the scope of the METR environment.

Figure 0-3 — METR streetscape

Key

A   Freight rules

B   Kerbside usage rules

C   Ride sharing rules

D   Micromobility rules

E   VRU rules

F   Public transport rules

G   Rules for automated driving systems

H   Driving rules

I   Lane use rules

J   Public-area mobile robot rules

K   Road work rules

L   Pre-announced rules with subset of emergent rules and/or supporting data

M   Emergent rules and/or supporting data

1   Various communications and network infrastructure

2   Roadside communication unit

3   METR user system

A   freight rules

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various communications and networks infrastructure

roadside communication unit

METR user system

Figure 3 — METR streetscape

0.1.40.5 Rule distribution

Electronic traffic rules and their distribution have three orthogonal characteristics that are often confused with one another.

a.a) ——Electronic rules can be pre-announced (i.e., known and publicized well in advance of the user's need) or emergent (i.e., publicized and needed while previously obtained pre-announced rules are still considered fresh).

a.b) ——Electronic rules can be distributed through a wide-area distribution mechanism or a local distribution mechanism.

b.c) ——Electronic rules can be pulled by users well in advance of their need or pushed to users as special conditions necessitate.

It is expected that the characteristics of METR users and the limitations on data capacities for local distribution mechanisms mean thatwill lead to virtually all persistent rules will bebeing pre-announced and distributed from a wide-area distribution source, likely using a pull mechanism. However, any emergent rule that is activated while previously distributed pre-announced rules are still considered fresh will require a push mechanism, often from a local distribution source. It is important to note that those

These two combinations are only typical use cases and thatonly. METR supports every possible combination of these three characteristics a) – c) and addresses how discrepancies can be reported and resolved.
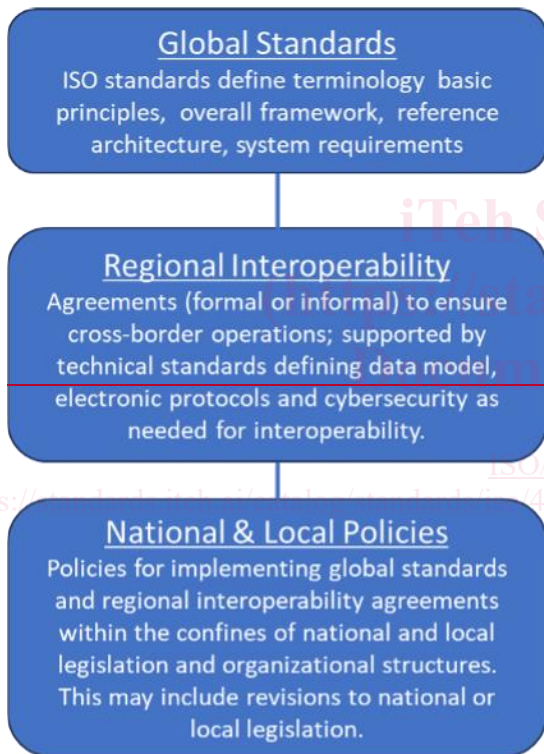
In addition, supporting data may provide context to the rules and can be transmitted by wide-area communication systems, roadside units, other vehicles, or on-board devices.

The rules cover virtually any rule related to surface transport systems; the graphicFigure 3 depicts rules for freight vehicles, kerbside usage, ride sharing, micromobility operations, vulnerable road users

(VRUs), public transport usage, driving (i.e~.,~ human-in-the-loop, including driver support systems, which represent Levels 1 ~and~ 2 of automation), ~Automated Driving Systems~automated driving systems (ADS, i.e~.,~ Levels 3 – 5 of automation ~Levels 3-5~), lane usage, public-area mobile robots (PMRs), and road works. This information needs to be available and conveyed to all transport users including nomadic devices, PMRs~,~ and vehicles equipped with driving automation systems (i.e~.,~ Levels 1~ – ~5 of automation). Although not shown in ~the diagram,~Figure 3, METR is also intended to be flexible enough to support rules relating to the use of ferries, passenger rail (e.g~.,~ trams, subways, and inter-city rail~),~) and off-road environments.

~0.2~0.6 Framework adaptation

METR is defined through the ISO 24315 series, which provides a comprehensive framework for the interoperable digitalization, distribution~,~ and management of electronic traffic regulations. ~This~Within the ISO 24315 series, this framework will be defined at a relatively high-~ ~level and will support both regional adaptation and customization, as well as the use of legacy protocols and data formats, as depicted in ~Figure 0-4.~ Figure 4.