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Intelligent transport systems_ – Management of electronic traffic regulations (METR) – _

Part-1: iTeh Standards Vocabulary (https://standards.iteh.ai) Document Preview

ISO/DTS 24315-1

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DTS stage

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

Partie 1: Vocabulaire

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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 <u>documentsdocument</u> should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part-_2 (see <u>www.iso.org/directives</u>).

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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.

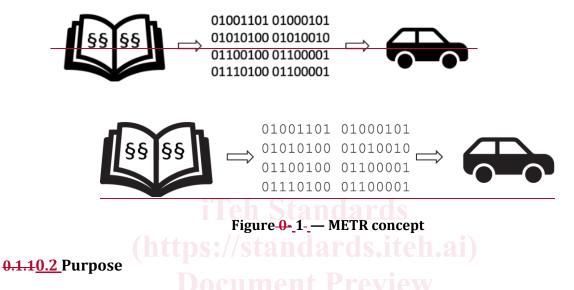
A list of all parts in the ISO 24315 series can be found on the ISO website.

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 <u>www.iso.org/members.html</u>.

OIntroduction

0.1 System overview

The ManagementISO 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.



METR is designed to assist developers and manufacturers of driving automation systems (i.e_{τ_2} automation Levels 1-5) and driver information systems (including those at automation Level 0) to electronically obtain traffic rules to better enable: <u>them in</u>:

tps://standards.iteh.ai/catalog/standards/iso/47542ffa-4c9f-45f0-bae7-b8db858a1234/iso-dts-24315-1 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, <u>however. The</u> content and application of <u>thethese</u> traffic rules is outside of the scope of <u>the METR</u> standards and specifications<u>on METR</u>.

0.1.20.3 Flow of information

The general flow of METR information is illustrated in <u>Figure 0-2Figure 2</u> and <u>subsequentlyis</u> described <u>below the figure</u>.

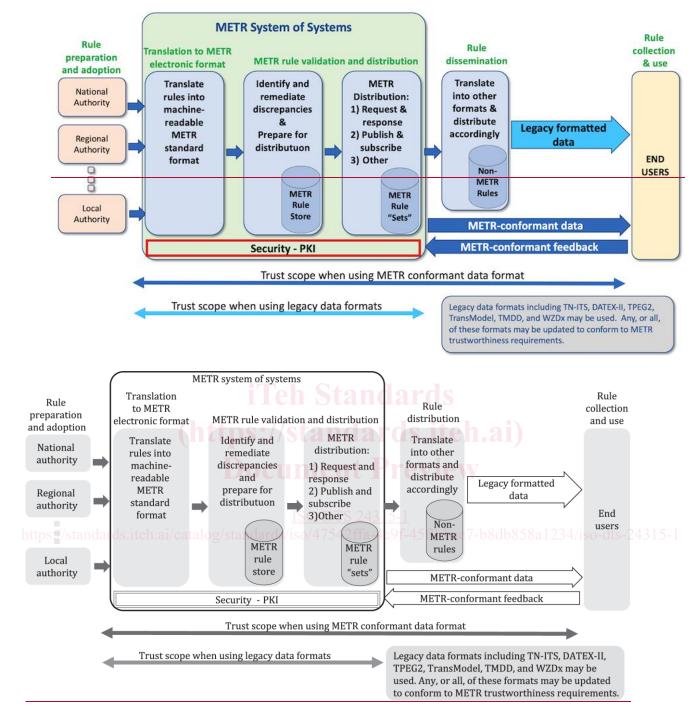


Figure 0-2- METR flow of information

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

- a.<u>b</u>) <u>eachEach</u> 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) <u>rulesRules</u> 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) <u>asAs</u> 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



Кеу

- A Freight rules
- B Kerbside usage rules
- C Ride sharing rules
- D Micromobility rules
- E VRU rules

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- https://standards.iteh.ai/catalog/standards/iso/47542ffa-4c9f-45f0-bae7-b8db858a1234/iso-dts-24315-1 **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
- <u>A</u> <u>freight rules</u>
- <u>B</u> kerbside usage rules

- <u>C</u> <u>ride sharing rules</u>
- <u>D</u> micromobility rules
- <u>E</u> <u>VRU rules</u>
- <u>F</u> <u>public transport rules</u>
- <u>G</u> <u>rules for automated driving systems</u>
- <u>H</u> <u>driving rules</u>
- I lane use rules
- I <u>public-area mobile robot rules</u>
- K road work rules
- <u>L</u> <u>pre-announced rules with subset of emergent rules and/or supporting data</u>
- <u>M</u> <u>emergent rules and/or supporting data</u>



various communications and networks infrastructure



roadside communication unit

(((()))) METR user system

<u>Figure 3 — METR streetscape</u>

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).

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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 that will lead to virtually all persistent rules will be being 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

<u>These</u> two combinations are <u>only</u> typical use cases <u>and thatonly</u>. METR supports every possible combination of these three characteristics <u>a</u>) – <u>c</u>) 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.e₇₂ human-in-the-loop, including driver support systems, which represent Levels 1 and_ 2 of automation), Automated Driving Systems<u>automated driving systems</u> (ADS, i.e₇₇. 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, PMRs₇ and vehicles equipped with driving automation systems (i.e₇₇. 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.g₇₂ trams, subways, and inter-city rail), and off-road environments.

0.20.6 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. ThisWithin 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.

<u>Global Standards</u> ISO standards define terminology basic principles, overall framework, reference architecture, system requirements

Regional Interoperability Agreements (formal or informal) to ensure cross-border operations; supported by technical standards defining data model, electronic protocols and cybersecurity as needed for interoperability.

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National & Local Policies

Policies for implementing global standards and regional interoperability agreements within the confines of national and local legislation and organizational structures. This may include revisions to national or local legislation.