



ELECTRONIC REGULATION CONFLICTS

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Welcome to the fourth stakeholder workshop for the development of the METR Operational Concept (ConOps)

Agenda

- Overview
- Conflicts
 - Enforcement
 - Detecting and Reporting
 - METR Response
 - Agency Response
 - Temporary Regulations
 - Offline Operations
 - Aged Downloads
- What have we missed

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Our discussion today will entail a series of more detailed questions about how conflicts should be handled by different systems, including the topics shown on this slide.

Acknowledgements

Small group has started structuring the problem

Editors

- Tom Lusco (US)
- Jim Marousek (US)
- Ken Vaughn (US)

Standards Process

- ISO/TC 204/WG 19
 - Drafting Team

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- Fabrizio Paoletti (IT)
- Steve Sill (US)
- Suzanne Sloan (US)

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It is important to acknowledge that the materials developed to date represents a team effort. While there is a core editing group, as shown in the upper left, the concepts presented within this presentation already reflect valuable inputs from the review team shown on the right. In addition, the overall document is being prepared under the auspices of ISO/TC 204/WG 19, and especially its METR Drafting Team.

Ground Rules

- METR is very complex and involves many disciplines
- Workshops are based on this structure and designed to receive feedback
- If you have comments, please voice your concerns
 - Verbally (and concisely) during discussion slides (marked with  icon)
 - Using chat window
 - Using discussion forum (<https://github.com/ISO-TC204/iso24315p1/discussions>)

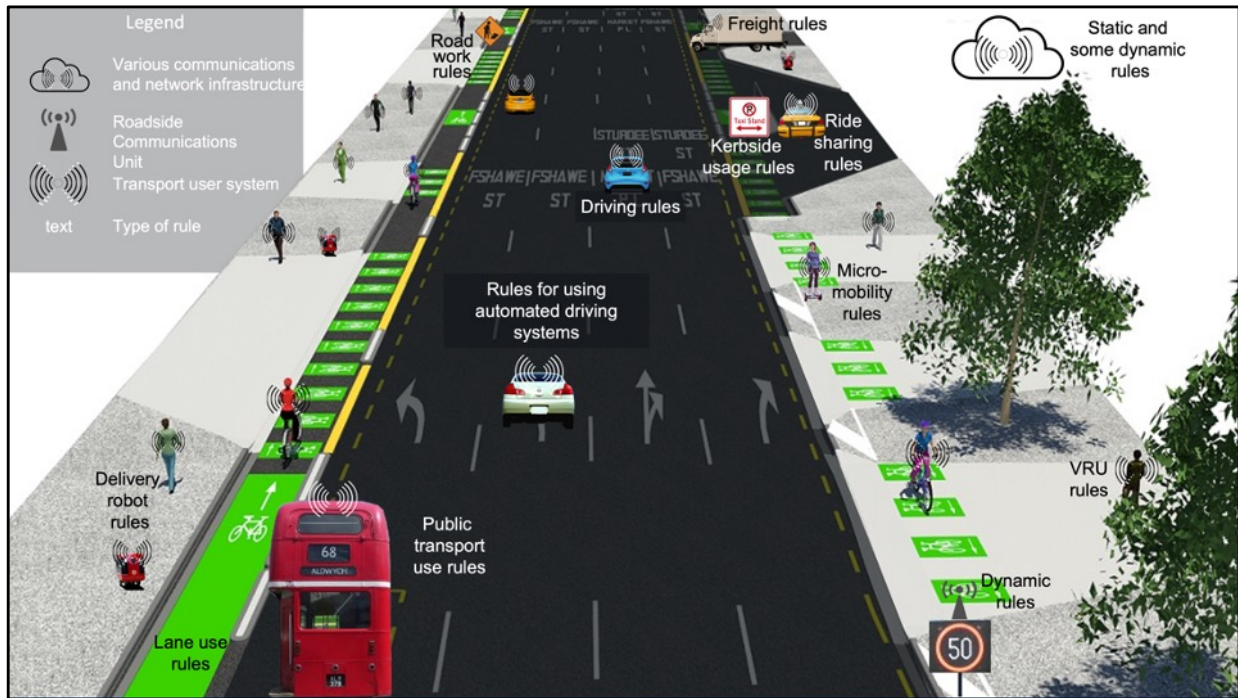
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Before we begin, it is useful for everyone to understand the ground rules of our conversation. The development of the ConOps is intended to be a cooperative effort that reflects the input from stakeholders from different perspectives. To facilitate this process, the development team has prepared the workshops to gain feedback from stakeholders – but your feedback does not have to be limited to the topics presented.

The workshops are generally structured to present a topic and then gain feedback. Participants are welcome to voice their concerns during the workshop presentations, either verbally or using the chat window, but we request that verbal feedback is made when we are on discussion slides. We also recognize that our workshops are time limited and comments should be kept fairly concise. If major topics of discussion arise we can schedule additional meetings to focus on specific points, as needed. We have also established a discussion forum on the Github site to promote off-line conversations and encourage everyone to use the facility,

After we complete the workshops, we expect to prepare a draft ConOps early next year, and there will be ample opportunity for additional comments on the document once distributed.



METR is intended to support all transport user systems. This includes: vehicle systems (e.g., automated driving systems and driver support systems), sidewalk delivery robots, and other devices such as smartphones used by pedestrians and perhaps units on-board micromobility devices (e.g., e-scooter interfaces)

The information provided to these users would potentially include all rules related to using the transport facilities, such as (from top and proceeding clockwise) any special rules for freight delivery or for the operation of heavy vehicles, kerbside usage rules (e.g., bus stop, taxi stand), ride sharing rules (e.g., what forms of ride sharing are allowed), micromobility rules (e.g., are e-scooters allowed in cycle lanes), VRU rules (e.g., is the sidewalk closed to pedestrians), dynamic rules (e.g., variable speed limits, lane control signals), public transport use rules (e.g., does my ticket qualify me for a transfer, what are the fare zones), lane use rules (e.g., bike only, bus only, HOV-2), delivery robot rules (e.g., what is the maximum speed for a delivery robot for this sidewalk), road work rules (e.g., speed limit for the work zone). METR is intended to be flexible enough to address all of the transport rules, these are just a few examples that demonstrate the breadth of the effort.

Importantly, in order to cover all rules, the scope must include rules that can change

or be imposed in a dynamic fashion. For example, temporary lane closures due to unplanned incidents and signal timing information need to be considered and handled in a trustworthy way, even when long-range communications may not be available. Thus, the full scope of METR will likely need to rely on both cloud based delivery mechanisms as well as local broadcast of exceptional data.

Conflicts and Enforcement

What are the legal and enforcement implications if there is a discrepancy between the posted and electronic regulations?

If ADS-equipped vehicles are required to visually detect rules, is there any benefit provided by METR?

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Our first question focuses on the legal and enforcement implications of discrepancies between METR and the real world. While we obviously want to avoid such conflicts, it seems inevitable that inconsistencies will arise. How serious of an issue is this? Our assumption is that as long as the provision of the information and the enablement of ADS and driver support systems result in a significant reduction in overall legal, insurance, and medical costs, the other details can be worked out. Nonetheless, it is critical that any discrepancies are minimized and reported as soon as discovered.

Alternatively, if a jurisdiction determines that ADS and driver support systems must be able to detect all posted rules in order to operate, what is the benefit of providing the information electronically?

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Judge - <https://clipartart.com/wallpaper/getimg.html>
Insurance - <https://www.quoteinspector.com/images/car-insurance/car-crash-fire-stone-letters/>
OEM - https://live.staticflickr.com/2880/12785681064_179e85426a_b.jpg
Driver - https://ro.wikipedia.org/wiki/Michel_Vaillant
Capitol -
https://upload.wikimedia.org/wikipedia/commons/4/47/ICON_Govt_Building.png

Detecting and Reporting Conflicts

- Should a user system (e.g., any user system or perhaps a special user system like an enforcer) report a discrepancy between the electronic regulations and observed posted regulations? If so, what information needs to be provided and to whom?



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When a vehicle detects a conflict what should it do? For example, should it:

- Report the discrepancy? If so, to whom and what data should be sent along with the information?

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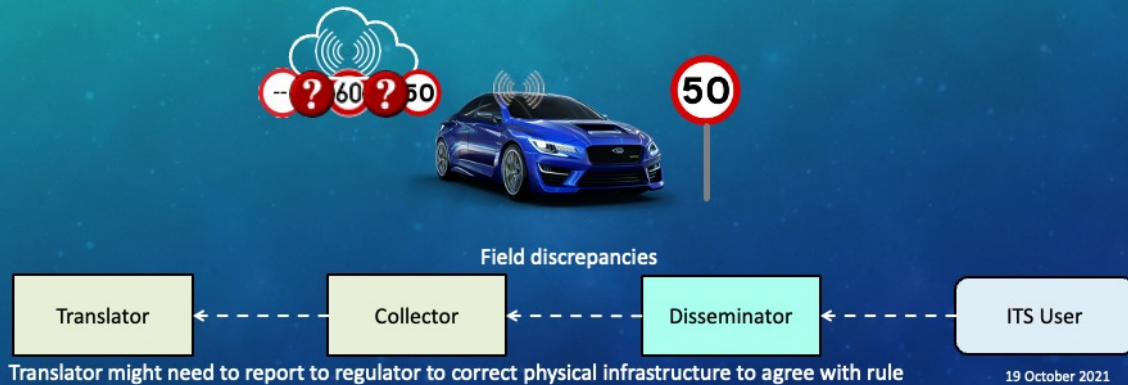
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METR with Known Conflict

- What should METR do when it learns of a conflict?
 - Should METR indicate the reported conflict to other users (e.g., "suspect data")?
 - What would ITS user systems do (or not do) with any such meta-data?
 - What should happen before the METR information is changed?



Once a METR subsystem (e.g., one fulfilling the responsibilities of a disseminator, translator, etc.), what should it do? Perhaps:

1. Verify that there is a conflict and begin corrective action
 1. If it can confirm that there is no conflict; notify the sender
 2. If it is unable to determine if there is a conflict (e.g., subsystem does not have all of the data), report to someone for manual investigation?
 3. If it can confirm that there is a conflict and it is due to an internal error (e.g., incorrect entry locally), correct it
 4. If it can confirm that there is a conflict in the source(s), report the issue to the source(s)
2. Should the subsystem notify other receivers (e.g., collectors notifying all disseminators; disseminators notifying all users, etc) – if so, under what conditions?
3. What would we expect ITS users do with data marked as suspect?
4. Any other actions?

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Agency Response to Conflict

- Upon receiving notice that the posted and electronic regulations are different, what actions should the disseminator, collector, and/or regulator take?

Translator ← Collector ← Disseminator ← ITS User

Translator might need to report to regulator to correct physical infrastructure to agree with rule

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If the conflict is due to a difference between the physical device and the electronic rule, what process should be followed to update the rule?

Is there a difference in response if the physical sign is correct and electronic incorrect versus the physical sign being incorrect (i.e., not what was approved) and the electronic signal correct

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Conflicts with Temporary Regulations

- How should conflicts between permanent and temporary regulations be resolved? For example, an electronic work zone speed limit is transmitted while a permanent physical sign is visible.



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What happens if the conflict is due between a temporary rule and a permanent rule? For example, the permanent physical sign is supposed to be covered, but it is actually visible. Should this be handled any differently than with other conflicts?

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Bag - <https://www.bbc.co.uk/newsround/22469321>

Reliance on Downloaded Information

- What is the expected validity period for downloaded regulations?
 - How timely do downloaded regulations have to be?
 - What are the implications for a user vehicle that is not actively connected?
 - What are the implications for download update frequency?
 - What changes in operation do agencies have to consider (e.g., RSU adverts for new signs)



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What is the expected validity period for downloaded rules? Does this vary:

- By region of the world
- By availability of connectivity within a particular area
- By user class
- By rule type
- Etc

What implications are there for vehicles that are dependent upon this data if:

- They drive outside of a connected area
- Mobile internet coverage (e.g., inside tunnels, parking garages)
- Mobile internet is lost for a period of time where it normally exists
- Alternate provision of data (e.g., through C-ITS data providers)
- How might different update frequencies impact the operations and deployment scenarios for public agencies

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ns_-_Prohibitory_Sign_-_Speed_limit_50.svg/600px-Mauritius_Road_Signs_-_Prohibitory_Sign_-_Speed_limit_50.svg.png

No -

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Update Period Exceeded

- How long should a user system continue to use electronic regulations that have not been re-confirmed (e.g., because the vehicle has not been turned on for a long time)?
- What happens after this timeout?



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What happens at the end of the expiry period? Can vehicles place any trust in any data previously downloaded? Is this perhaps strictly up to OEMs and regional law?

What happens when a vehicle is unable to rely on previously downloaded data that it requires for its operation? Do we need a remote refresh capability? What are the requirements for such a refresh?

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Long Term Parking -

https://www.melbourneairport.com.au/getattachment/Passengers/Parking/long-term-car-park/MAP0592_LTCP_702x473.jpg.aspx?lang=en-AU&width=702&height=473&ext=.jpg

General Questions



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Have we missed anything?



This completes workshop 4.

Workshop Schedule

Date	Topic
28 September	METR operations
5 October	METR operational structure
12 October	Electronic regulation life cycle
19 October	Electronic regulation conflicts
26 October	Vehicle operations
2 November	Vehicle information needs
9 November	Campus governance
16 November	Campus regulations
23 November	Roadwork and emergency operations
30 November	Multimodal and micromobility operations
7 December	METR deployment: Part 1
14 December	METR deployment: Part 2

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We've now completed 4 of our 12 workshops. Our next workshop will focus on vehicle operations, especially for ADS-equipped vehicles.

Workshop 5 Topics

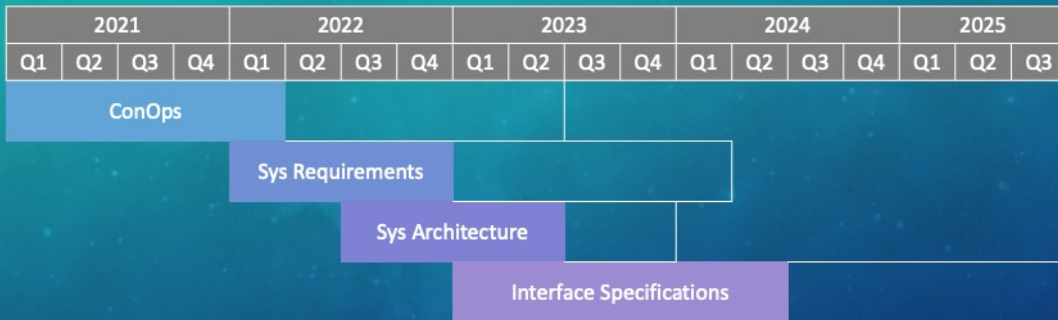
- Vehicle Operations
 - Filtering
 - Awareness
 - User/Road types
 - Detection of traffic control devices

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The workshop will focus on the topics shown on this slide

Tentative Schedule



- End of task shown at expected committee draft
- Transparent bar shows standards review and approval process
- System architecture is expected to be online only (i.e., it will use a shorter review process)
- Interface specification are expected to enhance existing standards

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As a reminder our current expected timeline is shown here. We hope to have a ConOps draft in early 2022, whereupon it will start the standardization process (of multiple reviews prior to standardization)

More Information

More information and a discussion forum is available at:

<https://iso-tc204.github.io/iso24315p1>



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More information about the project and the latest developments will be posted on our GitHub site. This will include a PDF of weekly presentation files to be posted after our meetings each week.

https://upload.wikimedia.org/wikipedia/commons/thumb/2/24/Cartoon_Guy_In_Deep_Thought_Using_A_Computer.svg/1200px-Cartoon_Guy_In_Deep_Thought_Using_A_Computer.svg.png