

Dear Colleague,

As many of you know, the International Organization for Standardization has accepted our proposal that there be an ISO standard drafted for *operating automated vehicles and devices at curbs (kerbs) and sidewalks*. A draft scope and purpose have been submitted, and our first committee meeting is scheduled for spring, 2020.

The draft formal name for this project is “*Sidewalk and Kerb Behaviour for Automated Vehicles: Arriving, Stopping, Parking, Waiting, and Loading*”, and is currently filed as: ISO/TC204/WG19/TR4448 with Bern Grush as its Project Leader. Technical Committee (TC) 204 is Intelligent Transport Systems.

**Operating the sidewalk and curb** is distinct from:

- *Coding the curb* (identifying and mapping — inventory — of what is at the curb), and
- *Managing the curb* (determining the use, purpose, rules, and permissions — i.e., regulating the activities at the curb).

Today *operating the sidewalk and curb* is handled through schedules, markings, signage, pricing, and regulated enforcement of activities at the curb). Each of these activities are currently mediated by a human who may be parking, waiting, riding, walking, sitting, standing, loading, delivering, removing garbage, plowing snow, washing windows, etc. at the sidewalk or curb. Furthermore, such humans may be using a wheelchair, have diminished hearing or vision or be otherwise disabled.

It is expected that soon, in addition to all these activities, operating at the curb will include robotic vehicles such as robotaxis and devices such as sidewalk drones, that will arrive, stop, park, wait and load under sensor, effector, and software control. Often unaccompanied by human passengers or attendants, these machines will need to be prioritized, scheduled, queued, bumped, and requeued regardless of the presence of human oversight, and all without blocking crosswalks, bicycle lanes, no stopping areas, or transit stops. These machines will need to communicate with each other, signal in ways that humans can interpret for safety, negotiate/grant right-of-way, move at appropriate speeds that will vary with circumstances, pass objects within given

tolerances and many more behaviours that we humans take for granted among ourselves when using sidewalks and curbs, including when we commit minor infractions that we are less likely to tolerate in the case of these machines.

Such blockfaces, when busy, will each be like a tiny, high-turnover, airport terminal. Hence the purpose of ISO TR4448.

*Intended use cases for this standard might include:*

Realtime assignment of loading bays to passenger vehicles and/or goods vehicles • Sharing/segregating slots among goods and people • Expressing/communicating time-allocations • Operational tolerances (times and distances) • Expressing/communicating speed limits on sidewalks • Adjusting tolerances, speeds, distances, limits • Expressing/communicating dynamic limits • How close may a drone pass a static entity? A machine entity? A human? • Handling peak demand for loading bays • How to queue • When can machines block traffic? • Pacing machines in traffic to arrive just-in-time (queuing in-motion) • Waiting in holding areas • Double parking • Holding at origin until a slot is assigned • Circling until a slot opens • Multiple sidewalk drones swarming within one blockface • Multiple drones queuing at an intersection • Priority-boarding/off-boarding system (e.g., one is carrying perishables).

The deliverable from this project is a set of associated, ISO standards that cover operations at the curb, the sidewalk and integrated systems that require mechatronic access to both, such as

delivery vehicles with embedded sidewalk drones that handle the final few meters. The deliverable also includes all terminology, data definitions, metrics, and cross references to related coding and management standards such as for parking and parking pricing, and other curb/sidewalk activities such as transit stops, bicycle storage, garbage bins, and many others. Wherever existing standards and definitions exist, they will be incorporated to maximize consistency with existing systems.

In order to complete this work, we are seeking **sponsorships** from each of several stakeholders. Sponsors have the opportunity to review quarterly drafts and recommend general or specific changes and additions that suit a sponsor's expectations regarding operating at curbs and on sidewalks as automated vehicles and devices are permitted to be mixed with humans and non-automated vehicles. Our effort on this Standard serves the direct interest of our sponsors, in their intention to guide and anticipate the curb and sidewalk of 2025 onward. In addition, specific, dependent, benefits accrue to Sponsors, as follows:

**Accessibility:** It is critical that ACA/ADA/EAA needs are understood and voiced in the context of all stakeholder interests. We believe that if accessibility concerns are tabled and addressed at the outset, we can develop a highly-inclusive standard that manufacturers, planners, operators, and BIAs can use to maximize system acceptance.

**City or Regional Government:** Matching zoning with Sidewalk and Curb expectations. Use pricing. Behavioral enforcement. Governance for BIAs. Guidance for planning. Governments need to influence and know standards in advance due to long planning cycles.

**Logistics Firms:** Scheduling, reservation, and queueing systems. Lobbying for slots, their dimensions, clearance, and schedules — especially lobbying for loading-area management reform in advance of the competition with passenger loading automation. Collaborative scheduling among carriers. Shared local storage and last-block distribution systems. Robot design, investment, procurement, operation, and use-planning. Scenarios. Training. Staffing.

**OEM and Tier 1 Automobile Manufacturers:** to anticipate numerous designs and capabilities regarding sensors, vehicle trim and accessory dimensions and any audio-visual cues to passengers or surrounding people and machines. Door design for access. Opportunity to promote the readiness of their vehicles to operate in mechanized environments in service of human mobility and safety.

**Sidewalk-drones and Micromobility Operators:** Makers of sidewalk-drones, bikes, scooters, and other mobility devices automated or not, need to manage and operate these devices for both people and goods within new environments of mixed automation. They need to influence and anticipate standards.

**Taxi, Ridehailing, Microtransit operators:** The owner/operators of such fleets would be influenced by such standards, especially at the curb and in some cases on the sidewalk. They need to influence and anticipate standards.

**Urban Planners:** Anticipate and perhaps lobby for new regulatory regimes for curb and sidewalk — especially modifications to *Complete Streets*. Design for Access.

Further information is available on request from [bern@harmonizemobility.com](mailto:bern@harmonizemobility.com). You will receive a detailed project description, and a founding sponsorship description and application.

Thank you,  
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