

AUTOMATED GOODS MOVEMENT

PLANNING, POLICY, AND LEGAL IMPLICATIONS

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DISRUPTING THE TRADITIONAL MUNICIPALITY

- **Liability for AVs**
- **Separate roadways**
- **Use of sidewalks**
- **Use of AVs for delivery and resource extraction**
- **Changes to the configuration of urban centres**

LIABILITY FOR AVs



- Liability for AV collisions is uncertain
- Long chain of potentially liable parties, including: manufacturers of vehicle; manufacturers of components; software engineer; and designer of intelligent road
- If there is a capacity for manual override of AV, there could potentially be differential liability depending on whether automation was being overridden at the time of collision
- Potential municipal liability if signage or lanes are not properly maintained, leading AV to incorrectly process markers
- Potential liability for inaccurate road mapping

ROADWAY INFRASTRUCTURE

Movement Infractions

- Liability is uncertain for speeding, illegal lane change, etc.

Red Light Cameras

- In Toronto and Ottawa, the registered owner of the vehicle receives the ticket, regardless of who is driving the vehicle

Separate Lanes

- Municipalities may choose to develop separate lanes for traditional vehicles and AVs
- Separate lanes will require separate regulation, separate traffic impact studies, etc.

SIDEWALK ENCROACHMENT

- Last mile delivery will make use of existing municipal sidewalks
- This could constitute “encroachment”
- City of Ottawa’s Sidewalk By-Law has specific provisions dealing with various types of encroachment, none of which include AVs
- City of Toronto describes encroachments as:
 - “anything installed, constructed or planted within the public road allowance that was not installed, constructed or planted by the City”
- AVs likely do not fall under this definition

AV USE OF SIDEWALKS

- **City of Ottawa Bylaw 2003- 530:**

“no person shall drive a vehicle on or over a sidewalk except for the purpose of directly crossing the sidewalk “

- **City of Toronto Municipal Code Chapter 950**

“No person shall drive a motor vehicle upon a sidewalk or footpath on a highway except for the purpose of directly crossing the sidewalk or footpath”

- **If a vehicle is truly automated, it is not being driven by a person**
- **Issues of interference with pedestrians, or with traffic where there is no sidewalk**
- **Potential solution: separate sidewalks for AVs, or a lane akin to a bike lane**

UAV DELIVERY

- **UAVs are federally regulated, in a standardized manner nationwide**



Toronto, Ontario



St. John's, Newfoundland

UAV DELIVERY –HEIGHT RESTRICTIONS

- **Transportation Canada is currently developing new regulations for UAVs**
- **UAVs will be integral to last-mile delivery, particularly in cities with a dense and built-up urban core**
- **Currently, UAVs cannot be flown higher than 90m above ground, must be in line of sight, and may be flown no closer than 75m from people, animals, buildings, structures, or vehicles**
- **Municipalities will require discretion to tailor UAV regulation based on local urban landscape and needs; this is a likely source of friction based on division of powers**

RURAL IMPLICATIONS OF AVS

- **Enhanced accessibility for remote communities**
 - Automation of freight transportation will lower shipping costs
 - Use of AVs for delivery to otherwise inaccessible communities
- **Resource extraction**
 - In Alberta, a mining company has completed commercial field trials of automated trucks at a mine
 - Testing ongoing of autonomous boats for fishing/ tracking of ocean life
- **Already occurring – Provincial government proposing to change rules of AV pilot project to allow for fully driverless testing**

DISRUPTING URBAN CONFIGURATION– RETAIL SPACE

Eliminating the need for retail space

- AV delivery will exacerbate the decline of brick-and-mortar retail
- Zoning practices based on the traditional assumptions about the amount of retail space required will need to be re-evaluated
- The decline of brick-and-mortar retail will significantly reduce municipal property tax income
- Any revisions to municipal taxation must occur at the Provincial level

Commerce in Restricted Areas

- AVs could be used as mobile points-of-sale, challenging the traditional delineation between commercial and non-commercial zones
- Large distribution company has patented AV that uses 3D printing to manufacture goods while en route

DISRUPTING THE CONFIGURATION OF THE CITY – PARKING/ ROAD SPACE

Parking requirements

- Companies such as Uber are attempting to shift to a model of decreased vehicle ownership, in favour of inexpensive and easily available hiring of AVs
- Such a shift could drastically reduce the need for parking spaces in the urban core
- Road capacity might need to be increased substantially, including separate lanes for AVs. This conflicts with the shift towards mass-transit.
- If current AV trends continue, the future City could be characterized by a dense urban core, with significantly less retail and parking space, surrounded by a suburban ring of distribution centres, warehouses, and massive parking lots

DISRUPTING THE TRADITIONAL MUNICIPALITY

- **AVs will challenge numerous elements of local governance, including:**
 - Planning, zoning and regulation of space
 - Revenue
 - Transportation
 - By-law enforcement
- **AVs constitute perhaps the most significant disruption to the configuration of the city since the motor vehicle**
- **Local government is not prepared**

QUESTIONS?



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