Automated Shuttle Trial

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Prepared for: iCity CATTS Research Day

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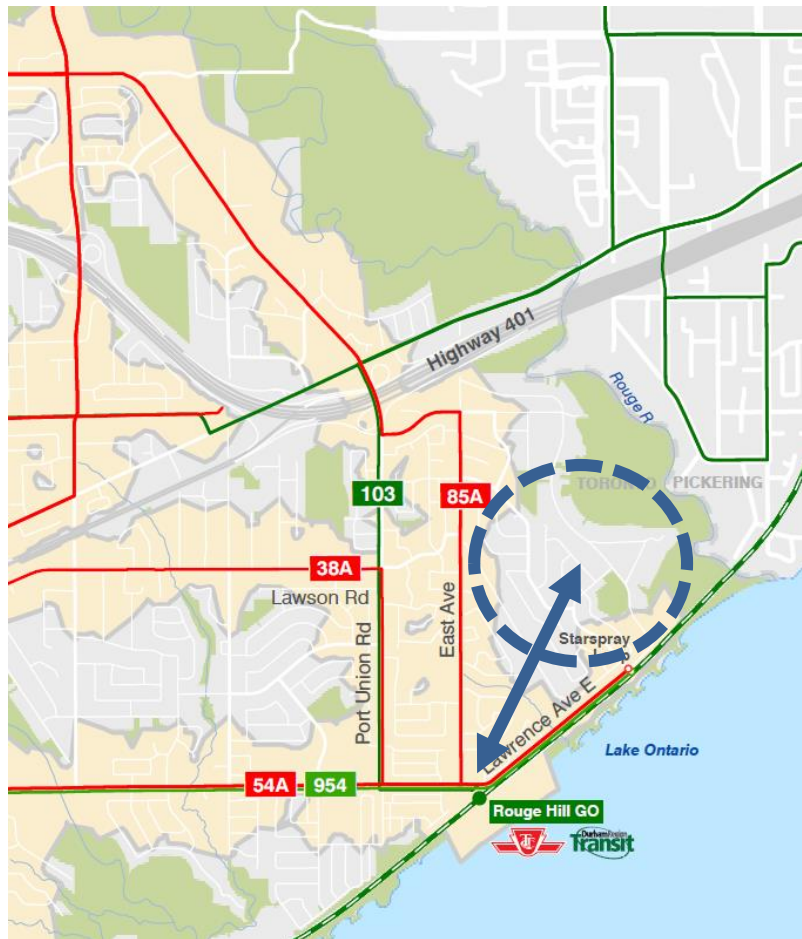TORONTO

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Automation in the transit system

- Metrolinx, the Toronto Transit Commission (TTC) and the City of Toronto want to learn about the potential for automated vehicles to fill existing gaps in the transit system.

- In 2018, we secured funding from Transport Canada's Program to Advance Connectivity and Automation in the Transportation System (ACATS) to conduct a trial with an automated transit shuttle.

Example of an automated shuttle trial in Candiac, Quebec

Preliminary Preferred Route

West Rouge Neighbourhood

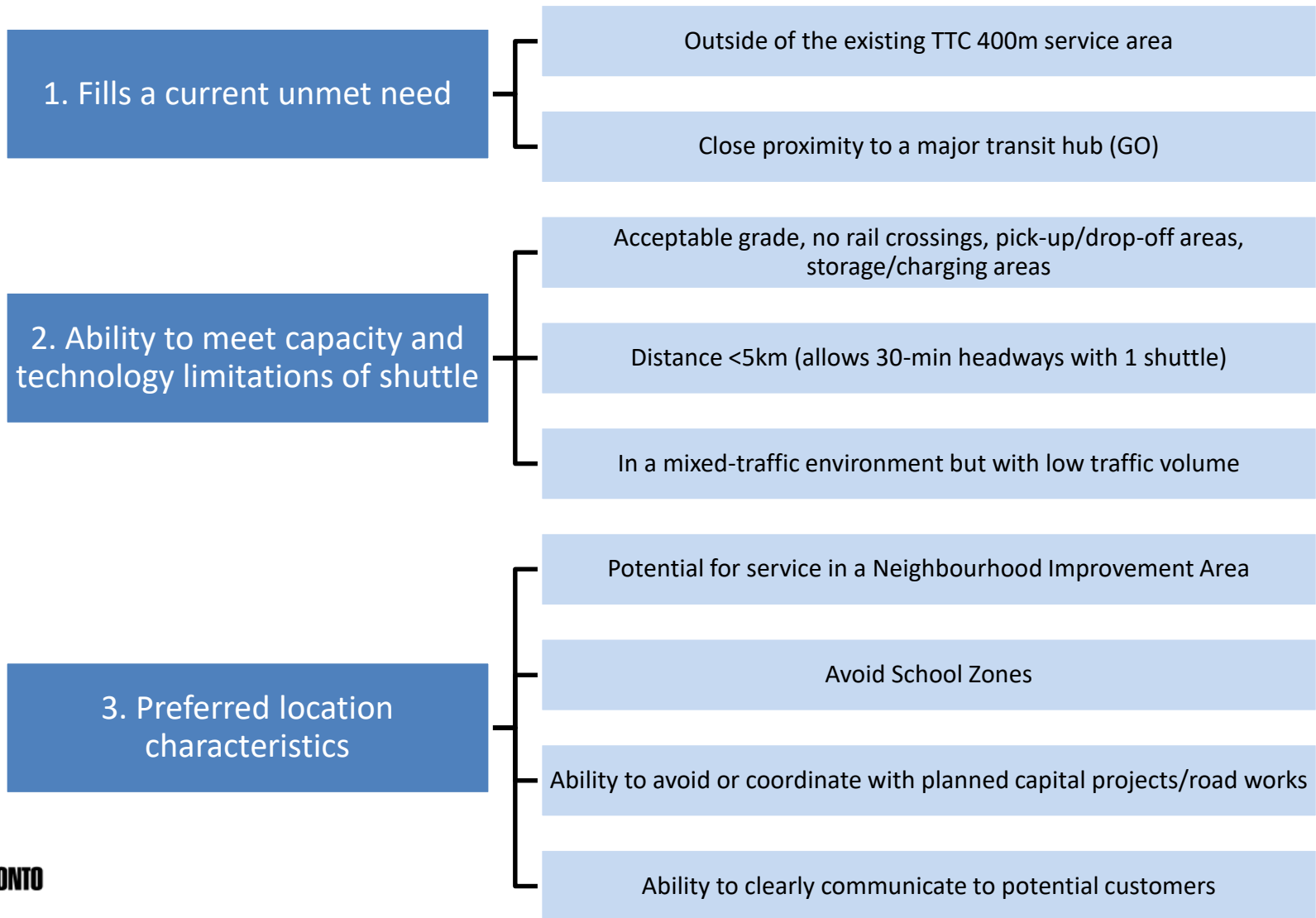- Weekday route: Rouge Hill GO to West Rouge neighbourhood

The shuttle would connect to a major transit station such as a GO station

Our goals

- Understand the potential of automated shuttles to fill gaps in the transit system in the future
    - No intent to scale up at this point in time
- Understand human interactions with automated shuttles
- Understand the technical requirements to operate an automated shuttle

Initial Route Selection Criteria

1. Fills a current unmet need
- Outside of the existing TTC 400m service area
- Close proximity to a major transit hub (GO)

2. Ability to meet capacity and technology limitations of shuttle
- Acceptable grade, no rail crossings, pick-up/drop-off areas, storage/charging areas
- Distance <5km (allows 30-min headways with 1 shuttle)
- In a mixed-traffic environment but with low traffic volume

3. Preferred location characteristics
- Potential for service in a Neighbourhood Improvement Area
- Avoid School Zones
- Ability to avoid or coordinate with planned capital projects/road works
- Ability to clearly communicate to potential customers

Proposed trial plan

- Service to start Fall 2020
- Run for about 6-12 months
- Passengers ride for free
- Run only during morning and evening rush hours Loop around about every 20-30 minutes
- Fixed route with fixed stops (locations TBD)

This plan may change - feasibility to be confirmed with the vendor in 2020.

Example of an Automated shuttle demonstration in Calgary, AB

Progress update

- Call for submissions – nRFP – December 19, 2019 → February 21, 2020

- Evaluated by City, TTC, Metrolinx
  - Procurement process is underway

- Economic Development Strategy completed by MaRS Discovery District – more details by Shagithya

Lessons Learned

1. Nascent market requires unique procurement practices
   a) Fairness Monitor
   b) Negotiated RFP

2. Service model dictates procurement document
   a) Customer experience within the vehicle
   b) Hailing and boarding the vehicle
   c) User protections
   d) Operator protections and needs

Lessons Learned (2)

3. Laws and regulations
    a) Accessibility
    b) Privacy regulations
    c) Camera privacy
    d) Insuring such a vehicle
    e) Data collection sensitivities
    f) Data collection and sharing between vendor and City/Project Partners
    g) Cyber security
4. Winter Operations – sensor and battery limitations
5. Import requirements and setup needs

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Accessibility requirements for the automated shuttle

- The vehicle and the service will need to comply with the:
    - Accessibility for Ontarians with Disabilities Act (AODA)
    - Highway Traffic Act (HTA)
    - Metrolinx Accessibility Policy
    - TTC Accessible Customer Service Policy
- A human attendant will be in the vehicle at all times and will be available to assist passengers as required

Example of an Automated shuttle demonstration in Calgary, AB

Accessibility requirements for the automated shuttle (2)
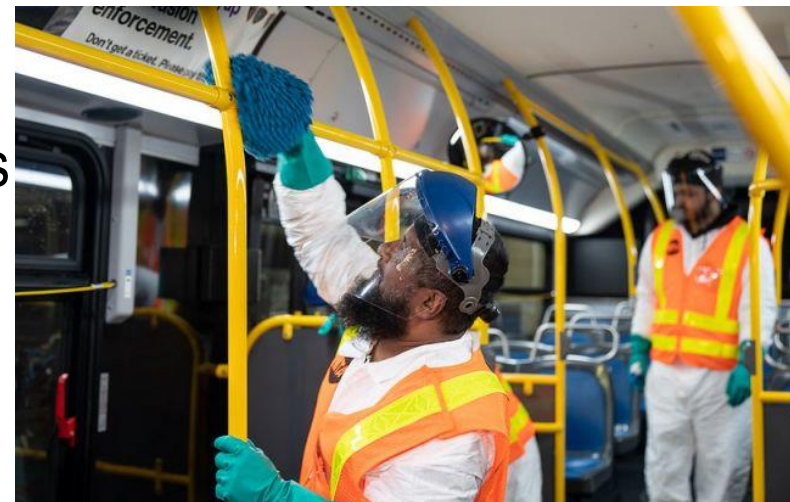
- Following the standards in the legislation, we currently anticipate having the following requirements for the potential vendors:
    - Have securement device(s)
    - Have a ramp (deployable automatically or manually by the attendant)
    - Make audible and visual next stop announcements inside and outside the vehicle
    - Facilitate use by persons with disabilities accompanied by service animals
    - Maximize interior space for persons with mobility devices
    - Follow best practices in the design of any mobile applications or websites, if applicable

COVID-19 Update

Existing service model was designed pre-COVID-19

Considerations moving forward:

- Social distancing, within an 8-person shuttle?

- Demand levels from Rouge Hill GO Station

- Vendor ability to meet project needs

- State of emergency – Provincial & City

- Toronto public health recommendations

- TTC and Metrolinx protocols

- Revised project timelines

For more information

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