




MEMORANDUM

TO: Mayor and Council Members

CC: Elaine Hart, Interim City Manager
Robert Goode, P.E., Assistant City Manager

FROM: Robert Spillar, P.E., Director,
Austin Transportation Department 

DATE: June 8, 2017

SUBJECT: **Staff Response to Council Resolution No. 20170504-039 – Robotic Delivery Model**

This memorandum provides a response to Council Resolution No. 20170504-039 (CIUR 1890) which directs the City Manager to explore the robotic delivery model offered by Starship Technologies or similar companies, analyze what city code amendments or other actions might be required to test such a pilot program in Austin and to make recommendations to Council.

Electric Delivery Land-Based Robots (Electric Personal Delivery Device- PDD)

Austin Transportation Departmental (ATD) staff has reviewed information provided by Starship Technologies, a company providing land-based electric robotic delivery services. We have conducted independent research to determine other companies that are exploring the robotic delivery market. We have also surveyed recently enacted legislation by other jurisdictions.

A review of the literature indicates as many as five or more companies are currently exploring, operating or conducting pilot testing in the US. However, many new companies are likely to enter this market as the economy continues to focus on automation. Like other elements of the shared and autonomous markets, these new devices will be disruptive, changing the nature of package and service delivery within urban communities.

Robotic companies identified as part of ATD's research include:

- Dispatch.ai
- Fetch Robotics
- Marble
- Segway Robotics
- Starship

Tech industry articles indicate that **Dispatch.ai**, based in South San Francisco, has launched a robotic delivery service in select locations in the Bay area. This year, Dispatch launched pilot programs at Menlo College and CSU Monterey Bay to deliver student mail, packages, etc. The device can be tracked by smart phone. Packages are secured via electronic lock that can be unlocked only by the recipient.⁽¹⁾

Fetch Robotics, headquartered in San Jose, CA, has focused on warehouse automation and personal assistance robotics, moving packages and inventory in assistance to the employee staff. ⁽²⁾

Marble, another San Francisco based technology company, has partnered with Yelp Eat24 in the Bay area to initiate a food delivery service. ⁽³⁾

Segway Robotics has partnered with Intel, unveiling its Loomo Go autonomous delivery robot. The system, built on the Segway platform, was introduced just this year and has demonstrated the ability to respond to its operator's commands and retrieve items. ⁽⁴⁾

Starship Technologies, an Estonian based company, is currently testing in the US. In Europe, they have previously partnered with various commercial outlets, including Just Eat and Pronto food-delivery (London); the Swiss Post; and Hermes delivery service (Germany). Starship is also working with Mercedes-Benz to develop a package delivery system teamed with a Sprinter van where several delivery robots might be deployed from a single van delivery vehicle. ⁽⁵⁾ Starship has previously conducted a one-week demonstration pilot in Austin at the Mueller Development and demonstrated their device downtown during this year's SXSW.

Analysis of Code Requirements and Applicable State Law

Several states, including Virginia ⁽¹¹⁾ and Idaho ⁽¹⁰⁾ have passed laws that allow and seek to attract robot delivery companies to their local markets. The states of Wisconsin and Florida are likewise considering legislation. Washington, D.C., has passed ordinances achieving at the municipal level, what the state laws do in Virginia and Idaho. ⁽¹²⁾ The various legislative ordinances specifically authorize use of sidewalks and cross-walks by automated robot delivery vehicles and set parameters on the size, weight, operating speeds, and required oversight characteristics for operation. One City, San Francisco, is reported to be considering legislation that would ban the use of delivery robots on city sidewalks based on a concern for pedestrian safety. ⁽¹⁹⁾ However, as evidenced by the number of technology companies operating or testing in the Bay Area, San Francisco's reported opposition to the new technologies has not yet dissuaded the introduction of start-up delivery services.

According to one source, the momentum for states and cities passing recent supportive legislation is being driven by Starship Technologies. The legislation previously passed has typically limited the allowable empty weight to require the robots to weigh no more than 50 or 80 pounds. ⁽⁶⁾ These weight limits are being established due to concern for pedestrian safety, however the current laws lock out many of the current providers from competing in those markets and could also limit the opportunity for innovations into integrated forms of delivery, for example providing distribution assistance for existing delivery services like FedEx or UPS that might need a larger platform to move heavier stacks of packages. By contrast, a review of commercially available motorized wheelchairs indicates that the typical weight of such wheelchairs is between 155 and 300 pounds. ^(7,8,9) Wheel chairs are managed by their users via an on-chair electronic control device, similar to the device used remotely to manage an automated delivery robot. The primary difference being the use of additional sensors and artificial intelligence in the robots to independently control the device or assist a remote manager when the device is being controlled manually.

A key commonality of both the state and municipal legislations passed in Idaho, Virginia and the District of Columbia is that personal delivery devices are defined as not being vehicles.^(10, 11, 12) This is an important feature as most states make it illegal to operate motorized vehicles (typically meaning automobiles) on public sidewalks.

The Texas Transportation Code, Chapter 541 defines the parameters for use of public streets or highways. The Code defines a vehicle as “a device that can be used to transport or draw persons or property on a highway”. The code further defines a highway or street as “the width between the boundary lines of a publicly maintained way any part of which is open to the public for vehicular travel”. The code identifies sidewalks as being intended for pedestrian use, including personal assistive mobility device (i.e., wheel chairs, Segways, and similar devices).^(13, 14)

Recommendations to Council Allowing and Encouraging Pilot Operation of Personal Delivery Devices (PDD):

As indicated in Resolution No 20170504-039, Austin is recognized as an innovative and technologically forward city. Austin has seen disruptive technologies enter our local market before. Experience suggests that the best strategy for addressing the anticipated disruption is to seek an accelerated adoption of the new technology while maintaining opportunities for competition.

Given this experience, a City ordinance authorizing the piloting of electric powered personal delivery devices (PPD) on City sidewalks, pedestrian ways and crosswalks is advisable. The ordinance should expressly define these devices as not being motor vehicles and authorize only the use of City-owned pedestrian ways to avoid conflict with the Texas Motor Vehicle Code. The Texas Motor Vehicle Code is silent on the definition of personal delivery devices (PDD). However, one manufacturer (Segway Robotics) is building a robotic platform that is possibly already captured in existing Texas law as a personal assistive mobility device and would therefore be allowed on sidewalks.

Staff also recommends that the weight limits used to define a personal delivery vehicle in the proposed Austin ordinance be based on the typical weight of personal assistive mobility device rather than the weight specifications of a specific technology provider. Personal assistive mobility devices are already allowed on sidewalks by Texas State law, including motorized wheelchairs and Segways.⁽¹⁴⁾ At least one Texas City, Dallas, places additional regulation on Segways, limiting their use at night and not allowing them on sidewalks.⁽¹⁶⁾

A proposed city ordinance would allow both unsolicited proposals from PDD operators as well as allow a City led request for interest in a pilot deployment.

Next Steps:

ATD will develop a proposed ordinance for Council consideration that authorizes the pilot use of City owned pedestrian ways for personal delivery devices. ATD will coordinate with other departments that might be affected (Office of Innovation, Austin Police Department, Austin Parks Department, Economic Development Department, Convention Center, and the Public Works Department). Following Council Direction on the proposed ordinance, ATD may issue a request for interest (RFI) or entertain unsolicited proposals for PDD pilots.

Because the proposed ordinance only authorizes pilot operation, and because State law is silent on the definition of Personal Delivery Devices (PDD), staff recommends the City seek language be inserted into the Texas Transportation Code that mimics the definitions and restrictions identified for the proposed City Ordinance. This would be consistent with state laws in Virginia and Idaho. Staff recommends Austin seek this modification during the 2019 legislative cycle, following the collection of data from anticipated pilot deployments over the next two years that would support state-wide deployment of PDD technologies.

Sources:

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