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CONTACTS:
City Tech Collaborative | Collaborate@CityTech.org

CITY TECH PILOTS NEW TOOLS TO ENHANCE TRANSIT OPERATIONS, SAFETY, AND RIDER EXPERIENCE
Chicago Transit Authority, Genetec, Intel, and Microsoft Create Predictive Capacity Models to Inform System Operations and Improve Trip Planning

Chicago – Has a city bus ever passed right by as you stood waiting at your stop? Have you ever arrived at a crowded train platform and realized (too late) that you’d walked right into a peak rush? Have you avoided public transit due to COVID concerns, without really knowing whether there’s room for social distancing?

How might public transit be different if system operators and riders had accurate, real-time capacity information?

Building on the Chicago Transit Authority’s (CTA’s) existing measures to keep bus and train service timely, efficient, and safe, City Tech Collaborative (City Tech), Genetec, Intel, and Microsoft are developing new tools to provide real-time insights on CTA occupancy across multiple vehicles. A pilot implementation on CTA’s 79th street bus line will allow CTA to proactively meet route ridership demand, reduce both passenger crowding and wait times, and provide a safe, socially distanced rider experience.

CTA has made heroic efforts to continue transit service despite the shock of COVID-19. Public health guided vehicle capacity limits, combined with unpredictability of ridership as cities close and reopen, have made it difficult to anticipate demand until now. Combining onboard capacity data with projection models will allow CTA to make service decisions even more quickly, such as adding or holding vehicles on a route or not picking up additional passengers once a vehicle reaches maximum capacity. These approaches will help agencies respond to unpredictable ridership promptly—whether due to the pandemic or other unexpected events—while continuing to operate as efficiently as possible.

“Though many public transit agencies reduced routes amid the pandemic, the CTA made no changes to scheduled service in order to continue to provide essential transit service to those who rely on it,” said Molly Poppe, Chief Innovation Officer of the Chicago Transit Authority. “Despite COVID-19, CTA still serves an average of 400,000 riders each and every weekday. Partnering with City Tech on this project will help CTA integrate state-of-the-art technology and analytics to serve our customers even better.”

With 1,864 buses that operate on 129 routes and across 1,536 route miles, CTA buses makes 19,237 trips a day to serve 10,768 stops. City Tech and partners will use the Chicago Transit Authority’s 79th Street bus route to test the new occupancy management solutions; with only a 29.5% decrease in average daily ridership since the beginning of the pandemic, the 79th Street bus has experienced the smallest dip in ridership across Chicago.

Providing 1.6 million rides on an average weekday (pre-COVID), the Chicago Transit Authority is the U.S.’s second largest transportation agency; joining City Tech and other technology leaders, the team will demonstrate how integrating existing assets and advanced technologies can improve short-term transit operations while also building a foundation for continued innovation.

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“Public transit is the circulatory system of our cities; it’s necessary to get us where we need to be and keep our businesses, economy, and our lives in motion,” said Brenna Berman, CEO of City Tech Collaborative. “Bringing together this team’s capabilities to create a scalable solution is just one piece of increasing our cities’ resilience beyond COVID.”

The collaboration will measure the efficacy of various passenger-counting technologies. Existing data sources including automated passenger counting and ticketing/tap data will be joined into a single dashboard alongside data from emerging technology being tested such as lidar, video, and a count of devices seeking Wi-Fi networks connections. No individually identifiable information will be stored or shared, and data collected during the pilot will remain private. In addition, other factors including weather, time of day, and events will inform the developed model to project ridership. Long-term, this comprehensive solution will allow CTA to understand the accuracy of these technologies, make improved operational decisions around bus and train deployment, and guide data publishing for public use such as sharing projected crowding figures per bus at each stop on a route.

Joining City Tech and CTA, Microsoft will support data creation, management, storage, and analytics activities using Microsoft Azure. Genetec, a provider of public safety, operations, and business intelligence solutions, will create the projection models to support proactive demand management, and Intel will support the integration of video and sensor feeds into the operational dashboard through edge computing.

“New applications that help government and transit agencies to be more responsive to the needs of people are an imperative, especially during COVID-19. Redirecting capacity, where and when it’s needed, providing accurate up-to-the-minute schedules is difficult without the right systems and data in place,” said Jeremy Goldberg, Microsoft WWPS director of Critical Infrastructure. “Access to these insights will make government services and transportation work better for people.”

According to Christian Chenard-Lemire, Director of the Cities Application Group of Genetec, “Using demand, historical and real-time data to create a real-time and projected picture of bus occupancy will allow the CTA, and other public transit agencies, to provide flexible transit operations, health-focused responses, and an improved customer experience to its passengers.”

“This solution relies on ingesting complex data from multiple sources,” said Sameer Sharma, General Manager of Smart City and Intelligent Transportation at of Intel. “Edge computing using Intel Core, Xeon and Atom processors will aggregate and interpret this information quickly to enable CTA to understand current conditions as well as be proactive in their responses.”

This project is part of City Tech’s Advanced Mobility Initiative, an effort led by Bosch, HERE Technologies, and Microsoft to create a more seamless and frictionless transportation system with increased accessibility and reach for urban residents. The Initiative includes six impact areas that City Tech will address through solution development, thought leadership, and resident engagement. Learn more about the Advanced Mobility Initiative and this work at www.CityTech.org/Mobility.

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About City Tech Collaborative
City Tech Collaborative (City Tech) is an urban solutions accelerator that tackles problems too big for any single sector or organization to solve alone. City Tech’s work uses IoT sensing networks, advanced analytics, and urban design to create scalable, market ready solutions. Current initiatives address mobility, healthy cities, connected infrastructure, and emerging growth opportunities. City Tech was born and raised in Chicago, and every city is a potential partner. Visit www.CityTech.org for more information and follow us on Twitter and LinkedIn.

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