Priority Area One: Passenger Real-Time & Trip Planning

Vision: Riders from across the region can easily navigate fixed-route transit options, access real-time information, and plan trips. Transferring between transit providers is seamless and easy.

Objective: Identify recommended steps that transit agencies can take that allow them to provide passengers with real-time information and fixed-route trip planning tools that make regional travel on transit a seamless travel experience.

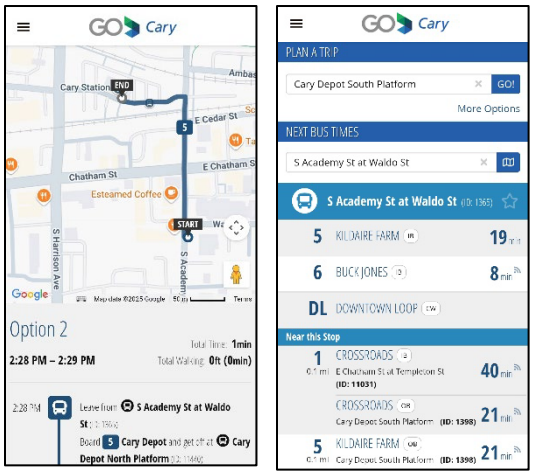
Initial Findings & Opportunities

Summary of Current Conditions

Passengers can currently access real-time transit information from multiple transit providers using various mobile phone applications that are provided through different contracts and systems.

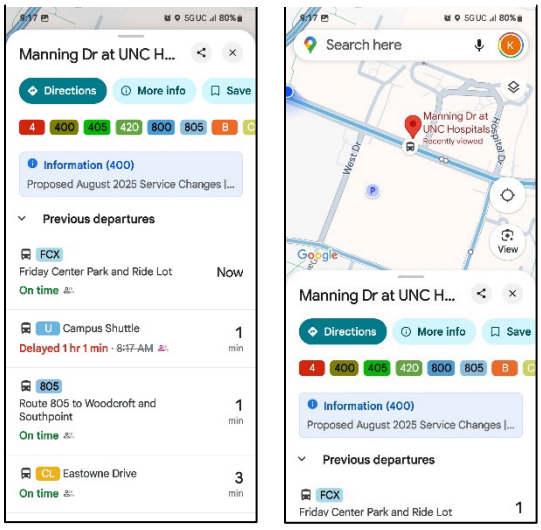
A summary description of how transit agencies currently provide this information through mobile phone applications is listed below. Table 1 presents a summary listing with hyperlinks for reference.

Figure 1: GoCary App Images



- GoTriangle and GoCary provide a mobile application developed by their Computer Aided Dispatch (CAD) / Automated Vehicle Locator (AVL) vendor (TripSpark).
- This application is known as MyRide and is branded for the public as the GoTriangle App and GoCary App for customers to download on their mobile phones.
- GoDurham routes are visible through a MyStop App that is provided from their CAD/AVL vendor known as Avail Technologies, though this is not promoted to passengers by Durham.
- GoRaleigh, GoDurham, and Chapel Hill Transit provide Transit Royale as a premium service of the Transit App for passengers and make the Transit Royale service free to all users. In addition to real-time transit information to passengers, the Transit Royale feature allows users to look at future departure times and schedules for all transit lines without any daily limits. This feature also launched for Raleigh riders in January 2025.
- Trip planning and route information is also available through the Umo app that is provided by Cubic. The Umo App has two interfaces:
    - A trip planner interface and,
    - A payment interface.

Figure 2. Google Maps Images of Chapel Hill



- Chapel Hill Transit and GoDurham do not have active contracts with Umo mainly due to the agencies not collecting fares. However, Chapel Hill and Durham static trip information is available in the UMO trip planner interface.
- Google Maps also picks up the General Transit Feed Specification (GTFS) and GTFS-Realtime (RT) feeds made available by transit agencies and provides transit information to passengers using Google Maps. None of the regions have an active contract with Google.
- GoRaleigh and Chapel Hill Transit are both providing real-time information in Apple Maps.
- Real-time transit information on desktop interfaces is also provided by all agencies as noted in Table 1 below. For example, Chapel Hill Transit provides real-time transit information through GMV system on the Town of Chapel Hill website.
- TextMarks is utilized by GoTriangle and GoRaleigh in the region for Short Messaging Service (SMS) text messaging to gather real-time transit information for people without smartphones and access to mobile applications. TextMarks reads GoRaleigh's GTFS feeds to provide the SMS service, which is a pilot project that TextMarks is doing with GoRaleigh.

Figure 3. Umo App Images in Durham

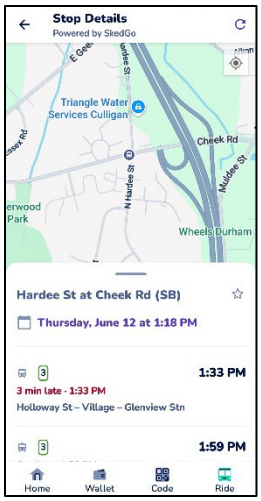


Table 1. Summary of Real-time Transit Information on Mobile Applications and Desktop Websites in Region

	GoTriangle	GoCary	GoRaleigh	GoDurham	Chapel Hill
Real-Time Transit Information through Mobile Applications			Transit App / Transit Royale	Transit App / Transit Royale	Transit App / Transit Royale
	GoTriangle App (Vendor: MyRide)	GoCary App (Vendor: MyRide)		MyStop App (Vendor: Avail Technologies)	
	Google Maps	Google Maps	Google Maps	Google Maps	Google Maps
	Apple Maps	Apple Maps	Apple Maps	Apple Maps	Apple Maps
	Umo app (Cubic)	Umo app (Cubic)	Umo app (Cubic)	Umo app (Cubic)	
Real-Time Transit Information on Desktop Interface	GoTriangle Regional Web Interface	GoCarylive.org Web Interface	GoRaleighlive.org Web Interface	MyStop Web Interface	Chapel Hill Transit page (Vendor: GMV / Syncromatics)
Real-Time Trip Planner Websites	GoTriangle Trip Planner Site	GoCary Trip Planner Site	GoRaleigh Trip Planner Site	Go Durham Trip Planner Web Interface	GoTriangle Trip Planner Site
SMS Messaging	TextMarks		TextMarks	TextMarks	TextMarks

Noted Challenges

The most notable challenge for transit agencies in the region is ensuring that passengers are viewing accurate real-time transit information, especially on applications that the transit agencies do not have much control over. This includes third-party applications that are not contracted with

the transit agencies, such as Google Maps and Apple Maps, and transit agencies in the region do not have control over the algorithms that produce real-time predictions in those applications. This is also especially important when there is a recent transit service change or an update to an agency's GTFS feed that is ingested by these third-party providers.

Other challenges noted from transit agencies includes the following:

- Although most mobile applications have the capability to display GTFS-RT information in the trip planner interface, the level of details can vary among vendors. For example, some applications may not display a moving bus icon to indicate that a bus is moving along a corridor, which can provide passengers with more confidence / comfort about the reliability of bus tracking and reporting of bus locations.
- Proprietary solutions for real-time transit information provided from technology vendors may become unreliable if the vendors become unable or unwilling to support continued operations. GoTriangle, GoRaleigh, GoDurham and GoCary had previously used a technology from a vendor that aggregated real-time location feeds from the agencies to provide an SMS text messaging service, but this service was eventually discontinued by the technology vendor, and passengers were unable to obtain real-time information using the SMS text messaging service.
- Given that CAD/AVL systems are the source for the real-time transit information, improvements in how real-time transit information is provided to passengers in the region are dependent upon improvements in those CAD/AVL systems. For example, announcing each stop is a functionality that GoRaleigh is exploring as an improvement that needs to be supported by CAD/AVL system.
- Developing an accurate schedule and calendar can also be a challenge with real-time transit information. Nuances in transit schedules have to be captured in the scheduling process. The GTFS-RT relies on the underlying static GTFS to determine arrival predictions. If the underlying GTFS is sloppy or not scheduled/calendared properly due to inaccurate data entry by the personnel responsible for its development, then it results in issues with the GTFS-RT feed.

Opportunities for Innovation / Collaboration

While transit agencies have made real-time transit information available through multiple different mobile applications, an opportunity may exist for transit agencies to promote a single source of real-time transit information for passengers traveling across the region on multiple transit agencies. From a transit agency customer service perspective, it may become easier if the transit agencies can point to one source of transit information instead of the different sources that are available currently. However, customers can obtain real-time transit information from multiple sources through mobile phones and applications, and providing these options to customers can allow them to choose the application that they are most comfortable with for getting transit information.

From the review of current conditions, the Transit Royale service from Transit App is offered by many transit agencies in the region for free to its customers, though an expansion of this service to other transit agencies would come with an added cost to those agencies. Transit Royale is a premium subscription service within the Transit App that can provide customers with additional features and customization beyond the free service offered through the Transit App. This service can be paid for individually by passengers, or transit agencies can pay an annual fee to cover the cost of the premium service on the Transit App for their passengers.

The Transit App does provide several features not available through Google Maps or Apple Maps, including automatic detour detection and in-app rider surveys. Detour detection senses patterns in real-time data to identify and display detours directly in the app. The survey feature enables transit agencies to gather feedback on rider experience or collect public input on proposed service changes.

Transit Royale unlocks advanced features that enhance the rider experience. These include

- Unlimited transit schedules for planning trips days in advance, whereas the base Transit App only allows for planning an immediate trip to see the next real-time departure.
- Access to multiple transit systems, allowing users to track real-time vehicle locations and departure times across agencies that publish GTFS-RT data. Note that routes from different agencies can appear in different colors to differentiate between the agencies. Also note that the base Transit App only shows departures for transit routes in close proximity to the user, whereas Transit Royale shows all routes from all agencies, even those that are not "close" to the users current location.
- Expanded trip results and the ability to view routes beyond a rider's immediate area
- Customization features, such as the ability to personalize route icons

Expanded use of Transit Royale could help to deliver a consistent, high-quality rider experience and improve coordination across the region's transit network. This would allow individuals to plan trips seamlessly across the region, be alerted with detours and stop closures, have access to real-time information, and allow agencies to collect feedback and survey riders.

One drawback to this approach may need to be considered for transit agencies that do not provide the Transit Royale features for its passengers, in that passengers would need to pay for the service in the absence of the transit agencies providing the funding for the service.

Another opportunity for the region can be to standardize how CAD / AVL systems are used in reporting detours and disruptions to transit service. The use of a "disruptions" feature on CAD / AVL systems allows transit dispatchers to actively use the CAD/AVL software in real-time to manage transit trips, blocks, and routes that are not going as planned. The process of how this "disruptions" is used varies by CAD / AVL vendor, but the use of this feature by dispatchers in real-time will improve the quality of the information provided to passengers. One example disruption to transit service could be a special event that requires closing a road for an extended period of time. However, smaller events such as a car broken down blocking the road for a small period of time may not be considered a disruption if it only impacts a single trip.

The use of this type of feature should be guided by a standard process for regional agencies and their CAD / AVL dispatchers, and training of those dispatchers can help ensure the use of sending out detour information is done on a consistent basis. Policies could be defined for the amount of time a disruption is estimated, so that CAD / AVL dispatchers are using the feature properly within their CAD / AVL system. For example, if a major detour is known more than a month in advance, then this disruption (likely a detour) can be built into an agency's GTFS and a new GTFS can be published. If a disruption is found less than a month in advance by an agency, then agencies will need to work with their CAD/AVL vendor for determining the best method for using the "disruptions" in the CAD / AVL system.

From a passenger perspective, agencies should also monitor how information on transit route disruptions is presented to the general public through various mobile applications used by the public. Some applications can ingest disruption data and accurately report it to the public, but some applications may require additional work to send this information through their platform.

Examples of one service detour for Durham Station Construction are provided as an example in Figures 4 and 5 below. In this example, the Route 400 will use Gate K, and the Route 405 will use Gate J at the station.

Figure 4 – Example Differences of Detour Information on Mobile Applications

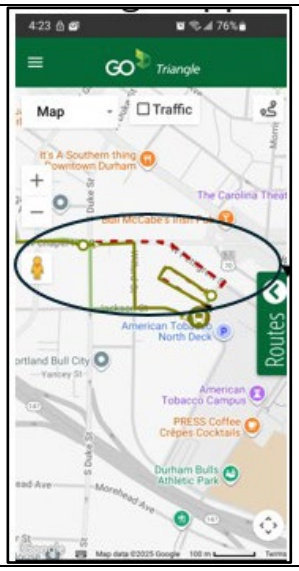
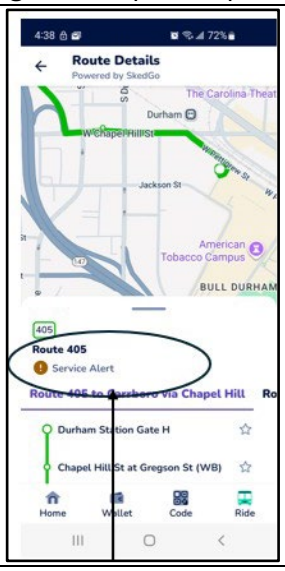
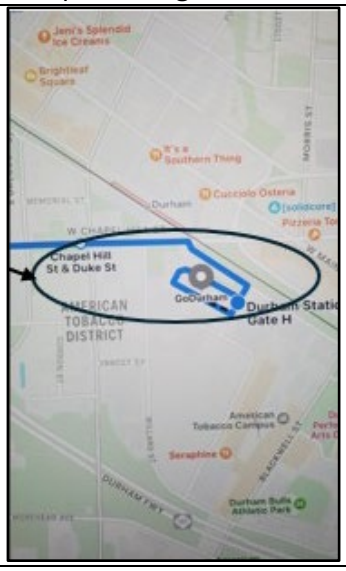
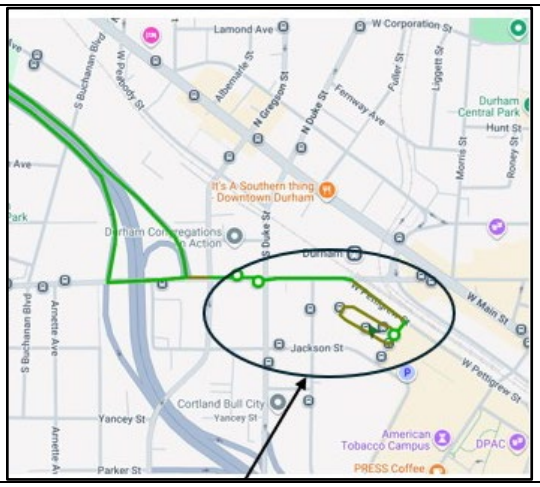
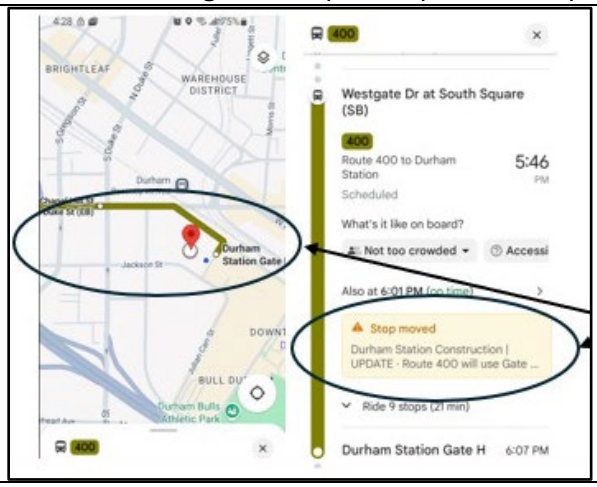
GoTriangle App – Shows the change in routing in red dash line with detour.	Umo App – Shows the alert on the website, but does not change the map or stop	Apple Maps – Does not show a service alert, or that map or stop is changed.
		

Figure 5 – Example Differences of Detour Information on Web-Based Desktop Applications

Web-based Map (gotransitnc.org) – Shows the GTFS data, but no detour and no alert	Google Maps – Shows an alert on the website, but doesn't change the map or stop on the map.
	

Case Study: Connecticut Department of Transportation (CTDOT)

In 2023, the Connecticut Department of Transportation (CTDOT) published their Customer Experience Action Plan after two years of extensive public outreach. The plan is aimed at improving public transit for riders across Connecticut and one of the top customer priorities identified was the need for a simpler way to plan trips. Shortly after CTDOT partnered with Transit App to offer Transit Royale—a premium version of the app—free to all residents for one year as a pilot program. Given the success of the app, CTDOT renewed the one year contract in 2024 and again in 2025.

The Transit App allows users to plan trips across multiple transit systems statewide. The initial rollout included information from all eight CT*transit* divisions, CT*fastrak*, five of the nine fixed-route Transit Districts, CT*rail* services, and the Metro-North Railroad's New Haven Line. Two months after launch, a deep link to Token Transit—the mobile ticketing app used by many Connecticut transit providers—was added to streamline fare payments.

In 2024, additional fixed-route transit districts were integrated, and by 2025, all fixed-route providers in the state were included in the app. The microtransit zones for one transit district were also added to the Transit App with a link to the ride request app. Real-time schedule information became available for half of the CTtransit-branded services and four Transit Districts. Rider alerts and detour notifications were also made available for CTtransit routes.

Within the first year, Transit App usage in Connecticut surged by 95%. In 2024 alone, the app saw 90,000 monthly users, was opened 38 million times, and facilitated the planning of over 5 million trips. That same year, CTDOT introduced a quarterly Ridership Happiness Benchmark survey within the app, enabling users to rate their satisfaction and provide feedback—helping to shape future transit improvements.

Lessons learned include the following:

- A champion is needed to lead the effort and work with smaller agencies that may not have the technological capabilities.
- If a system does not have AVL then only static GTFS can be used; those with an AVL must be able to provide a GTFS-RT, not all systems could with their existing vendors. Transit App offers GO Crowdsourcing that allows App users to share their transit trip and provide vehicle tracking, even in areas where there is no GTFS-RT feed.
- Microtransit services (with apps) can be integrated with a deep link into Transit App and show up as potential trip options.
- It is possible to integrate certain fare payments app directly into Transit App.
- Implementing as a pilot project allows for testing proof of concept and satisfaction before rolling out to a wider area, adding additional features or committing to longer contractual periods.

Recommendations for Real-Time Information and Trip Planning in Region

Given the existing real-time transit information systems in the region, the following are recommendations for the region.

Recommendation #1: Establish GTFS-RT as Standard for Making Real-Time Transit Information Available

GTFS Realtime (GTFS-RT) is an open standard developed by Google as an extension of the General Transit Feed Specification (GTFS). It enables transit agencies to share real-time information such as vehicle locations, predicted arrival times, and service alerts. Built on protocol buffers, GTFS-RT provides a standardized format that third-party applications can access via an Application Programming Interface (API).

GTFS-RT has become the global standard for delivering real-time transit information. Because it uses a common data format, any app—such as Google Maps, Apple Maps, or Transit App—can ingest and display transit updates without needing to tailor their systems to individual agencies.

There are three core GTFS-RT feed types:

- Vehicle Positions – Shows real-time vehicle locations.
- Trip Updates – Provides delays, detours, and adjusted schedules.
- Alerts – Communicates service disruptions, temporary stops, and crowding levels.

These feeds allow third-party applications to display accurate vehicle tracking, predict arrival times based on actual conditions, and keep riders informed of service changes.

Adopting GTFS-RT as the standard for real-time transit data empowers riders to use the app of their choice for up-to-date travel information. Best practices for implementing GTFS-RT feeds have been developed by CAL-ITP, GTFS.org and others, and include the following:

- Real-time data feeds (APIs) published at a public, permanent URL with an uptime of 99% or greater
- Follow all the official GTFS Realtime Best Practices
- Realtime trip data should be provided for all routes.
- Realtime feeds should be provided for Trip Updates, Vehicle Positions, and Service Alerts.
- The transit agency must provide dependable information about trips and routes. Canceled trips, unscheduled trips, and detours must be provided. Additional information on this topic is provided in Recommendation #3 below.
- Create a documented process for improving data quality and supporting processes and technology
- Update the Trip updates and Vehicle Positions feeds at least every 20 seconds.
- Known service disruptions should be published in advance. If it is known less than a month in advance, the real-time data should be modified; if it is known more than a month in advance then the GTFS schedule data should be updated. Additional information on this topic is provided in Recommendation #3 below.
- Include the GTFS-RT feed on your website so they are easily discoverable
- Publish your links to global GTFS aggregators such as Transit.land and the Mobility Database
- Provide a way for individuals to report errors or inconsistencies within the GTFS
- If an API key is required to access your GTFS- RT feeds the registration process should be available to everyone, straightforward, automated and transparent.

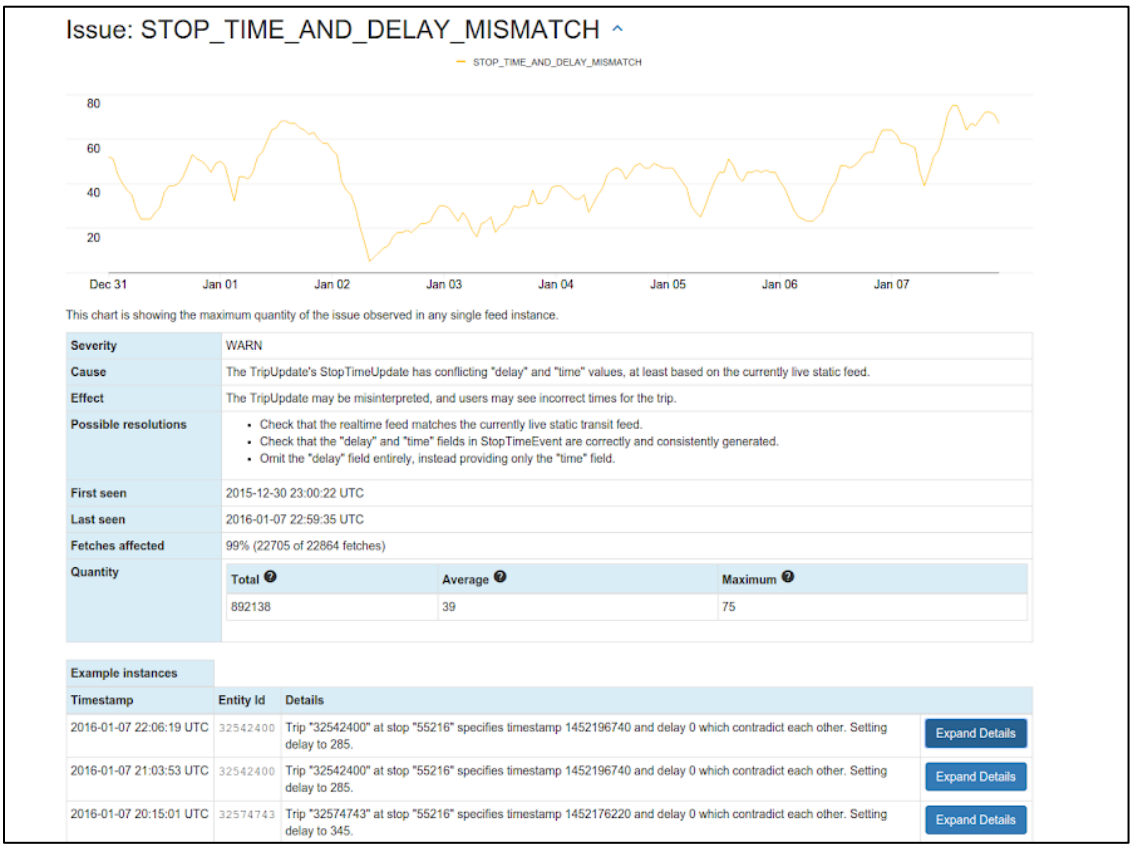
- Static GTFS are the backbone on which predictions are made, high quality accurate data is necessary.

Once a GTFS-RT is initially published the agency is responsible for notifying trip planning applications such as Transit App, Google Maps, apple Maps, Moovit and others that it is available. Each application has its own process.

Recommendation #2: Monitor the Data Quality in Realtime Feeds

A challenge the transit agencies face is ensuring that passengers are viewing accurate, real-time transit information, especially on applications that the transit agencies do not have much control over. This includes third-party applications that are not contracted with the transit agencies, such as Google Maps and Apple Maps. While these apps utilize the feeds provided, each one uses different algorithms to predict arrival times. Transit systems should be monitoring their feeds for quality, stability, and coverage. The GTFS Realtime specifications must be consistent with the underlying static feed, required fields completed, and data must be pushed consistently. Google has a Transit Partner Dashboard that allows agencies to monitor the quality of their real-time feeds over time. Daily and weekly reports can identify feed issues that are categorized by severity, that can be used to identify causes and effects, possible solutions, when they occur, and how widespread the issue is. Often the issues identified have to do with underlying issues with the schedule data, hardware issues, or not entering in detours, modified routes, or canceled trips.

Figure 4. Example of Feed Issue Summary From Google



Source:
https://support.google.com/transitpartners/answer/6173287?hl=en&ref_topic=9055174&sjid=6201534873729942261-NA

Recommendation #3: Contact CAD / AVL Vendors to Determine System Upgrades and Configurations Needed

All five systems offer an open API for GTFS and GTFS-Realtime (GTFS-RT), with feeds available directly through the GoTriangle Developer Resources page[1]. The method of feed generation varies by agency and depends on the CAD/AVL provider. Issues with the feeds often result from software configuration settings. Systems using Software-as-a-Service (SaaS) platforms receive automatic updates and always run the latest software version. In contrast, legacy systems require manual updates by the agency, which may involve additional costs. Running outdated software can limit access to new features, security patches, and performance improvements. Agencies should ensure they are operating on the latest version and work closely with their vendor to optimize settings and configurations for the most accurate and reliable GTFS-RT feed.

One example of a CAD / AVL system upgrade discussed under the Opportunities section of this memo was related to a "disruptions" feature that allows dispatchers to actively use the CAD/AVL software in real-time to manage transit trips, blocks, and routes that are not going as planned. Agencies can determine how this feature is provided from their CAD / AVL vendor and identify any system upgrades and / or configurations that may be needed to enable the use of this feature.

Also as noted earlier, the use of this feature should be guided by a standard process for how it is used, and training of those dispatchers can help ensure the use of sending out detour information is done on a consistent basis. This can help to improve the quality of information received by passengers who use a variety of mobile and desktop applications to perform trip planning and receive real-time transit information.

Recommendation #4: Provide Options to Passengers for Real-Time Transit Information

To encourage transit ridership in the region, transit agencies should identify various applications for passengers to obtain real-time transit information in the region. One example that GoRaleigh, GoDurham, and Chapel Hill Transit are currently following is through payment of a subscription to Transit Royale – a premium version of the Transit App - for their riders to use for free. Communicating to passengers about the availability of this premium service is one way to provide an incentive for passengers to utilize the application for obtaining real-time transit information.

Other options for real-time transit information are available to passengers as noted within this document. Identifying those options as listed in Table 1 of this report for passengers on the agency websites may help to increase transit ridership given the options for how the information can be obtained.

[1] GoTriangle Developer Resources page available at: https://gotriangle.org/developer-resources.

Recommendation #5: Monitor Potential for Integration of Applications that Can Improve the Ease of Use of Transit Operations for Passengers

Agencies should continue to monitor for opportunities to increase the integration of various transit software packages that are utilized by their agencies. These would be integrations that could increase the ease of using transit operations by passengers in the region.

For example, through prior discussions with the project management team, a potential opportunity could exist to integrate the Transit App with Umo as an existing mobile fare collection system in the region. While the Transit App has integrations at varying levels with other ticketing technologies, this integration with Umo could increase the ease of use of transit across the region for passengers using Transit App, but this approach may depend on whether the integration is successful in other areas of the country. It is recommended to monitor how this integration is performed in other areas of the country to prior to considering this integration.

As another example, the Transit App could also integrate with Swiftly as a Transit Service Planning tool, in which Swiftly provides real-time transit data, including vehicle locations and service disruptions, to the Transit App for it to present real-time transit information to passengers that use the Transit App. This integration is facilitated through a data feed using the GTFS-RealTime standard (GTFS-RT), allowing for data sharing between the Swiftly and Transit App systems. While CAD / AVL vendors may also be able to perform this integration, adjustments to the data provided through can be made in cloud-based software that could allow for a faster process of updating information that would be presented in the Transit App.

As noted earlier, GoRaleigh, GoDurham, and Chapel Hill Transit make real-time transit information available through the Transit App for passengers. GoDurham has already completed this integration of Swiftly with the Transit App, which enables accurate, real-time transit information to be shared through the Transit App to passengers. GoTriangle has also been reviewing the potential to subscribe to the Transit app as well.

Future use of Swiftly and the Transit App integration will allow for more transit agencies in the region to direct passengers to a common application, which will make it easier for passengers to navigate transit options, access real-time information, and plan trips on multiple transit providers across the region.

Recommendation #6: Enhance Trip Planning With Detour Notifications and Service Updates

Effectively communicating service changes—such as detours, stop closures, canceled trips, and last-minute updates—across multiple platforms is a persistent challenge for transit agencies. However, it is essential to ensure passengers receive timely, accurate, and dynamic information. While some service disruptions are planned, many occur unexpectedly.

Although dispatchers typically have tools to document these disruptions, the ability to relay this information in real time often depends on the capabilities of the agency's CAD/AVL system. In the context of GTFS-Realtime (GTFS-RT), such changes are communicated through the Trip Modifications feed.

To improve responsiveness and passenger communication, transit agencies should consider implementing tools that streamline the process of inputting detours, stop closures, canceled trips, and other real-time updates. Ideally, these tools would automatically integrate with the GTFS-RT

Trip Modifications feed, ensuring affected stops and detours are properly displayed and canceled trips are removed from public-facing information systems.

Recommendation #7: Adopt Standards and Minimum Requirements for Location Sensing Components

A Global Positioning System (GPS)/Cellular Antenna is the most common onboard location sensor used to communicate a vehicle's location. The sensor is composed of three main components that determine its accuracy. These components are the location precision, polling rate, and latency. The location precision is how accurate the GPS is and is typically impacted by the antenna location and environment, as tall buildings create a canyon effect, diminishing the GPS performance. The polling rate is how often the GPS pings the location, and higher polling rates equate to more frequent polling and less time between transmissions. Latency is how long it takes for the information to travel from the GPS source to a real-time passenger interface, such as a mobile app. A low latency provides information quicker. It is impacted by the steps and components in the system, such as the GTFS-RT data publishing rate. The polling rate plus the latency is how old the data is when it reaches the end user. A low latency combined with a higher polling rate equates to more timely information being provided. Common standards used for these variables are as follows:

- Location Precision – GPS antennas should be mounted on the vehicle's exterior, be able to withstand a wide temperature range, various environmental conditions, and be able to go through an automatic bus washer. Antennas should have an accuracy of 10 feet, 95% of the time or more.
- Polling Rate – The minimum polling rate required by various real-time integrators is 30 seconds or less, with ideal polling rates closer to every 5 seconds. A minimum of 10 seconds or better should be adopted.
- Latency – 8 seconds or less from the time the vehicle is polled to when it gets to the GTFS-RT data feed.
- GTFS Realtime Publishing – GTFS-RT feeds should be refreshed at least every 30 seconds, with lower values more desirable. A study published through the Transit IDEA Program[2] showed that CAD / AVL systems were publishing real-time vehicle locations on average once every 15 seconds.

Roadmap and Resiliency Plan for Future Years

A roadmap with phased implementation steps is presented in Figure 5-3 below.

Budgetary considerations are provided in Table 5-1.

[2] https://onlinepubs.trb.org/onlinepubs/IDEA/FinalReports/Transit/Transit93.pdf

<u>Step 1</u>: Establish GTFS-RT as Standard for Making Real-Time Transit Information Available Adopting GTFS-RT as the standard for real-time transit data empowers riders to use the app of their choice for up-to-date travel information.	→	**<u>Step 2</u>: Monitor the Data Quality in Realtime Feeds** Utilize Google Transit Partner Dashboard to monitor the quality of real-time feeds through daily and weekly reports to identify issues and possible solutions.	→	**<u>Step 3</u>: Contact CAD / AVL Vendors to Determine System Upgrades and Configurations Needed** Agencies should ensure they are operating on the latest version and work closely with their CAD/AVL vendor to maintain the most accurate and reliable GTFS-RT feed.
Years 0-1		**Years 1-2**		**Year 1-2**
	↓			
<u>Step 4</u>: Provide Options to Passengers for Real-Time Transit Information Provision of value-added options for real-time transit information by all transit agencies allows for a consistent, high-quality rider experience and improves coordination across the region's transit network.	→	**<u>Step 5</u>: Monitor Potential for Integration of Applications that Can Improve the Ease of Use of Transit Operations for Passengers** Can provide additional integration opportunities with other transit software packages, such as Umo and Swiftly that agencies are familiar with in the region.	→	**<u>Step 6</u>: Enhance Trip Planning With Detour Notifications and Service Updates** Review the GTFS-RT Trip Modifications feed and capabilities of CAD / AVL vendors to implement tools that can streamline the process of inputting detours, stop closures, canceled trips, and other real-time updates.
Years 1-2		**Years 2-3**		**Years 3-5**
	↓			
Step 7: Adopt Standards and Minimum Requirements for Location Sensing Components Identify common GPS/Cellular antennae that can be used to communicate vehicle location while meeting requirements on location precision, polling rate, and latency.				
Years 3-5				

Figure 5-3 – Roadmap of Implementation Steps for Real-Time Transit Information in the Region

Table 5-1: Budgetary Planning-Level Cost Estimates for Real-Time Transit Information							
	Buses in Fleet	**Value-Added Application per Vehicle (1)**	**Detour Notifications per Vehicle (2)**	**Service Update Alerts per Vehicle (2)**	**One-Time Costs (2)**	**Year 1 Costs**	**Annual Cost Estimate After Year 1**
GoTriangle	74	$300	$550	$290	$405	$114,330	$84,360
GoCary	20	$300	$550	$290	$405	$30,900	$22,800
GoDurham	63		$550	$290	$405	$78,435	$52,920
GoRaleigh	137		$550	$290	$405	$170,565	$115,080
Chapel Hill Transit	91		$550	$290	$405	$113,295	$76,440
						$507,525	**$351,600**

1 - Average value based upon multiple existing contracts held by Cleveland RTA, SORTA, Utah Transit Authority, and Champaign-Urbana Mass Transit District. Contract values vary based on economies of scale for larger agencies and the Transit App features purchased beyond the core offer of Royale (fare payment integrations, Passenger feedback/Rate-My-Ride, automatic detour detection & Display, APIs for web-based trip planning, push notifications, network change previews)

2 - Values based on the listed annual price per vehicle provided from a transit vendor to Citibus in Lubbock Texas