Technical Proposal submitted in response to

RACINE ON THE LAKE

City of Racine, Wisconsin

AVL/CAD SYSTEMS
Official Notice. #12-2020

Submission by

CONNEXIONZ
Smart Transit Solutions

27720 Avenue Scott
Unit 190
Santa Clarita
California 91355

CONTACT AND COMPANY DETAILS

Connexionz Limited is a limited liability company registered in the United States:

ID F160704-5 and Federal EIN 98-0441396

Company number: CH827162 issued 09/30/1996

AUTHORIZED REPRESENTATIVE

Name: Brian Garrett
Title: US Sales Director
Telephone: 213 807 9366
Cellular Phone: 309 706 0174
Email: brian.garrett@connexionz.com

SECONDARY CONTACT

Name: Wayne Smith
Title: Chief Executive Officer
Telephone: 661 505 5234
Email: wayne.smith@connexionz.com

Regional Office Address

27720 Avenue Scott
Santa Clarita, CA 91355

Mail Address
(Primary Mailing Address)

1 Show Place, Addington Christchurch
8014 New Zealand

Head Office Address
(Primary US Physical Address)

27720 Avenue Scott
Santa Clarita, CA 91355

This Proposal shall remain valid for a period of not less than 120 days from the date of submittal

The ITS system we are proposing in response to your RFP is confirmed as being "Buy America" compliant, with a majority of the hardware proposed being manufactured in the United States and all hardware being installed and maintained by experienced US staff.

UNITED STATES
27720 Avenue Scott
Unit 190
Santa Clarita, CA, 91355
Tel: +1 661 451 1005

www.connexionz.com

December 8, 2020

Monica G. Santos – Purchasing Agent
City of Racine Purchasing
730 Washington Avenue
Room 105
Racine, WI 53403

Dear Monica, City of Racine, and Ryde Transit teams;

Re: RFP: 12-2020 - Automatic Vehicle Location and Computer Aided Dispatch System

On behalf of Connexionz, I would like to thank everyone at the City of Racine for the opportunity to submit the following proposal for your consideration. The Connexionz team has spent considerable time with your requirements and have recommended a system design that is 100% compliant with your intended specification.

The Racine Transit technology project is exactly the type of ITS deployment that we excel in - providing well-integrated, specialized, yet entirely practical intelligent transit systems for small and mid-size transit agencies ... transit agencies just like the City of Racine!

The system we recommend has been trusted by agencies for over 20 years. Additionally, Connexionz has had numerous successful integrated deployments alongside UTA, our preferred APC supplier. Many agencies across the USA have a great deal of confidence in the integrated dataset provided by Connexionz and UTA. This includes 7 individual agencies of ours who have gone through the NTD approval process with success just within the last few years.

At Connexionz, we do deployment differently. We have a dedicated project management team that makes roles and responsibilities clear throughout. We include your team in a dedicated project "discovery" meeting that ensures that the system we have designed is purpose fit and can meet your business rule expectations. We take time to survey every vehicle type and deliver design documentation so that the system we deliver fits well within your day-to-day operations.

We will provide you with all the hardware, software, and services you need. Since systems integration is one of our specialties; you will find all your needs meet both current and future through one vendor. We have built long-standing relationships with on-board hardware vendors, meaning we have successfully delivered other projects similar to the Ryde project. This not only serves as a harbinger of success, but it also saves you money, as we do not need to 're-invent the wheel'.

We can fulfil this ENTIRE important upgrade for City of Racine with one vendor, one relationship, and by implementing trusted systems. The core functionality of the system is easily met; including CAD/AVL back office capability, real-time arrival predictions and tools for your riders, ADA compliant announcements systems, and integrated AVL/APC data. Additionally, Connexionz provides many options for future phases that can be easily added. Some of these include real-time vehicle diagnostics, multimedia solutions, and traffic priority systems. With Connexionz, these future options don't incur any additional software costs.

At Connexionz, we share your primary goal of increasing ridership and confidence in your system. Therefore Connexionz turn-key "out-of-the-box" offer includes "Ryde" branded applications for iOs and Android. Your public portal and applications will include options for riders to organize very specific alerts/subscriptions for their trips. GTFS feeds are included as a standard which makes 3rd party integration simple. Connexionz will assist City of Racine in announcing the new services to the public with our free "go-to-market" support that we provide alongside any new deployment.

We understand that the proposed cloud-hosted system should create important efficiencies for the back-office and dispatch teams. You will be pleased to learn that the Connexionz system will immediately provide accurate audits on real-time and historical performance information. The system will improve data collection by automatically producing data for revenue and deadhead mileage without entering odometer data. You will find the Connexionz system to be simple, effective, and customizable for your needs.

We invite and encourage Racine Transit to dig deep in to not only the small reference list provided but also investigate our reputation in the marketplace among our customers, our partners, Urban Transit Associates, and state agencies and departments.

I would submit five factors for consideration when comparing CNX to others:

Experience. Connexionz has been providing and innovating our core ITS products for 20+ years. You'll be hard pressed to find a group of transit tech professionals as experienced and dedicated as the folks on the Connexionz team.

Accuracy. Our predictions are the most accurate in the transit industry. Further, the sharing of this data through GTFS, GTFS-RT, and APIs has always been a primary focus; long before our competitors hopped on the bus.

Proven and Reliable. We work only with proven and reliable ITS components. Although we constantly develop new features and functions, we won't make promises we can't keep.

Practical. The best part of providing only accurate, proven, and reliable ITS is knowing that our solutions are going to work exactly as expected. No surprises! Our costs are kept down because we do not dangle (expensive) bright shiny objects before our customers. We aren't fancy, we're practical!

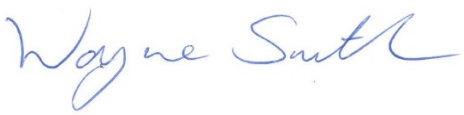
Accessible. At Connexionz, our entire team is customer facing, and that includes me, the CEO. You are our highest priority.

It is our people that make the difference! Yes, we are a small company, but we pack a lot of knowledge and power into our small size, and we maintain a very strong set of values. It is the strength and talent of our transit technology professionals that, when combined with our company-wide values, and impeccable customer service, allow us to make every implementation a success.

It is no wonder that our customers come back to engage in 3, 5, and 7-year support contracts after their initial terms end.

We look forward to the chance to discuss our solution in more detail with the City of Racine Transit system.

Yours sincerely



Wayne Smith
Chief Executive Officer
+1 661 505 5234
wayne.smith@connexionz.com

TABLE OF CONTENTS

Click on the Connexionz logo on each page to go back to the Table of Contents.

EXPERIENCE AND QUALIFICATIONS

Connexionz Limited is a public trading company with our main US office in Santa Clarita, California. Established in 1996, Connexionz has more than 20 years of experience in delivering ITS systems globally. Our primary focus has always been making a valuable difference for small and medium agencies.

Connexionz remains wholly owned by a small number of shareholders located predominantly in the United States. The company is registered in the state of California as a limited liability corporation. Our California office is responsible for deploying and supporting the installation of Intelligent Transportation Systems into US transit agencies, while our international office fronts all development.

We design, deliver, and support end-to-end Intelligent Transportation Systems (ITS) solutions for public transport agencies globally, including consultancy services for Transit Centers and long-range technology planning.

CNX TransitManager, our core ITS platform, is a Real-Time Passenger Information (RTPI) system combined with a powerful Computer Aided Dispatch (CAD) system and highly accurate Automatic Vehicle Location (AVL) technology. The use of GPS positioning systems provides agency staff with real-time bus location information and passengers with real-time service updates and arrival prediction information. A core feature of the on-vehicle ITS functionality remains our advanced Audio-visual Automated Voice Annunciator System (AAVAS).

> "The Connexionz ITS system is impressive, as is the accuracy of the Connexionz passenger information. We've realized significant improvements in service efficiency."
>
> V. Gibson. Transit Manager
> City of Pasadena (CA)
> CalAct Board Member

CNX Promise to City of Racine

The Connexionz Promise: Accurate, Proven Reliable.

Connexionz promises to fulfill the commitment outlined in this proposal by being:

- Transparent, honest, forthright, and professional in our work.
- Our solution is based on a deep understanding of your needs and is devoted to your long-term business success.
- Our solution is reliable, proven and trusted by agencies exactly like the size of City of Racine with similar requirements.
- Our entire team is attentive, understanding, and familiar with your solution.

Client References

We strongly encourage you to contact our references.

Tri Delta Transit

Contact Details:

Steve Ponte, Executive Director
tel: +1 925-754-6622
email: SPonte@eccta.org
address: 801 Wilbur Ave Antioch, CA
website: http://trideltatransit.com/

Project Scope:

71 Buses
23 local bus routes
750 stops

Turnkey, Real Time Information System, CAD/AVL, Automatic Audio-Visual Announcement System, on 71 buses, Automatic Passenger Counting System on 46 Buses, 23 routes, 750 bus stops, Information distribution via 34 x BusFinder ™ at stop signs, 2x 3 Line LED Displays, Web, WAP, SMS and IVR system, NavTeq GIS Maps. Radio and Cellular Communications.

Integration with 511, signal priority, Cubic, Genfare, Luminator, Twinvision, Transtrack, UTA, and Hanover.

Initial Contract $700,000

2018 – 2nd contract – 5 year extension

City of Pasadena Transit

Contact Details:

Valerie Gibson, Transit Manager
tel: +1 626-744-7452
email: vgibson@cityofpasadena.net
address: 100 N. Garfield Ave., Pasadena, CA 91109
website: https://www.cityofpasadena.net/pasadena-transit/

Project Scope:

40 Buses
7 local bus routes
300 stops

CAD/AVL, Automated Voice Annunciator System (audiovisual), fleet management, Real-Time Passenger Information, smartphone applications, website, on vehicle video surveillance, Mobile Data Terminals, Automatic Passenger Counters, 120 x BusFinder™ Displays, yard Wifi, on approximately 40 fleet and service vehicles.

Originally awarded 2012: $600,000 with $500,000+ in additions over 5 years

2019 - 2nd contract – 5-year extension including a traffic signal project

Stanislaus Regional Transit

Contact Details:

Robin Cody
Project Consultant
(925) 786 1875
email: RCody@outlook.com

Project Scope:

20 transit buses
1 motor coach (MCI)
28 demand response buses
120 stops
8 routes

Fixed route solution includes dispatch, real-time passenger information, UTA Automatic Passenger Counters, LCD and LED electronic displays, automatic stop announcements, internal LED displays, integration with ticket machines and head signs, public website, multimedia systems.

Award: $1.2m

Deployed in 2020

Robin Cody – is a retired technical employee of Bay Area Rapid Transit (BART). Robin works with Agencies as a consultant providing project management support from RFP to deployment. Connexionz has worked with Robin on various ITS implementations including Stanislaus County, Bakersfield, San Luis Obispo RTA, and KART (Hanford, California).

Golden Empire Transit

Contact Details:

Robert Williams,
tel: +1 661-869-6358
email: RWilliams@getbus.org
website: https://www.getbus.org/

Project Scope:

100 fixed route buses
29 demand response buses
29 support vehicles
1044 stops
16 routes

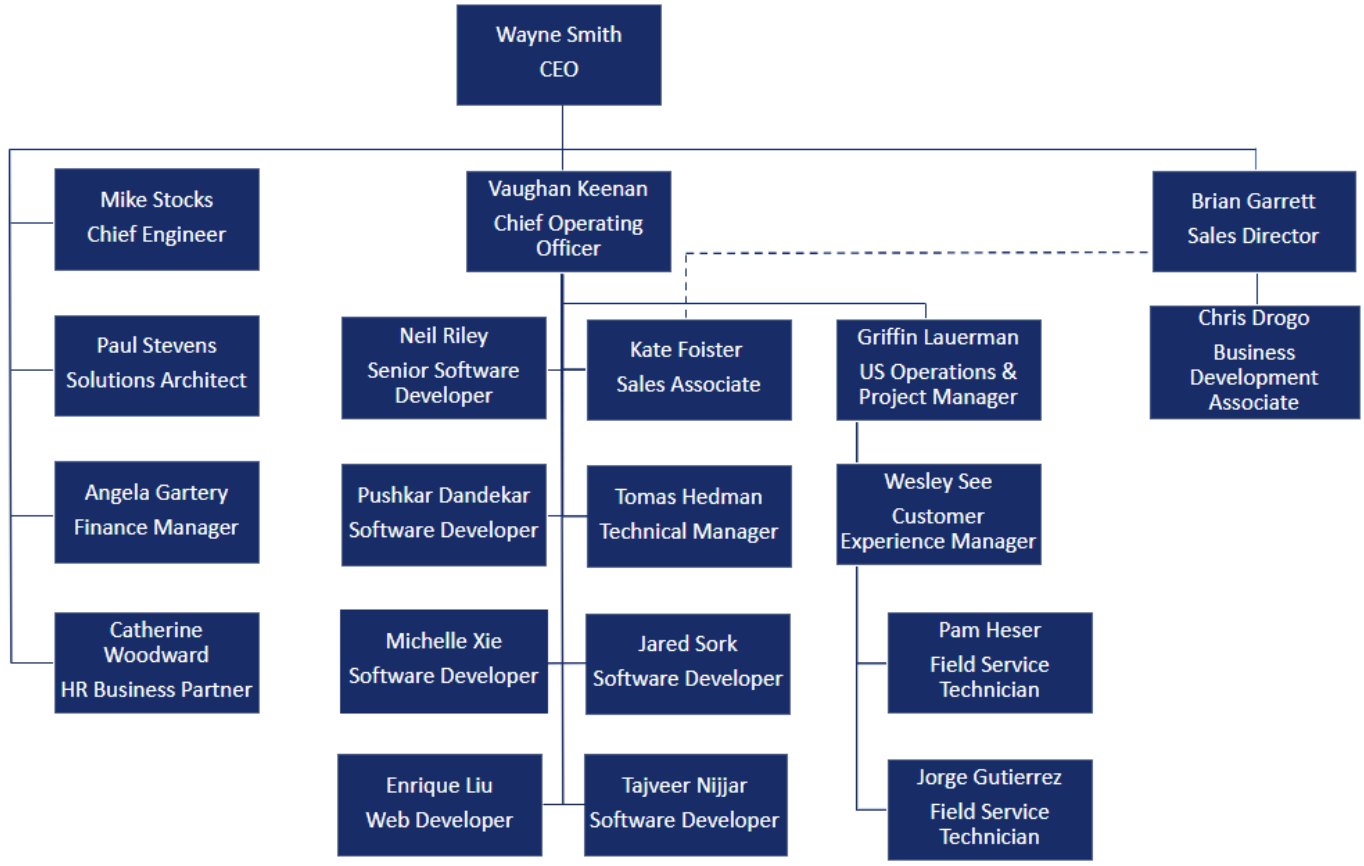
Contract secured to include the tracking of fixed route, demand response, and support vehicles. Fixed route solution includes dispatch, real-time passenger information, Automatic Passenger Counters, LCD and LED electronic displays, solar-powered displays, automatic stop announcements, GTFS and GTFS-RT feeds, Traffic Signal Priority (TSP), internal LED displays, integration with ticket machines and head signs. Smartphone applications and public website. Demand response solution includes scheduling and dispatch functionality, Interactive Voice Response (IVR) and mobile data terminals.

Other connexionz references include : Corvallis Oregon Transit, Grant County Oregon Transit, Arlington Virginia Transit, NYC Ferries, Alcatraz Ferries, San Luis Obispo RTA, Santa Clarita Transit, KART (Hanford California), Valley Tansit (Walla Walla, Washington), San Joaquin Rregional Transit District, City of Pendleton Oregon, Columbia County Washington, Thousand Oaks California, and Chapel Hill North Carolina.

ORGANIZATION AND STAFFING

At Connexionz, it's our people that make the difference. Our entire team is dedicated to serving mid-size transit agencies like the City of Racine. Below we have a company org chart and we have also included some brief profiles of major delivery team members.

Yes, we are a small company, but we pack a lot of knowledge and power into our small size, and we maintain a very strong set of values. It is the strength and talent of our transit technology professionals that, when combined with our company-wide values, allow us to make every customer a promise.



Organisation Chart – Connexionz

Wayne Smith - CEO

Wayne has held senior and executive leadership roles with large corporations in Australia and New Zealand including Hewlett Packard, Thales, and Airways.

A seasoned leader with broad commercial and technology experience in telecommunications, aviation, banking and retail sectors, Wayne offers proven ability to develop partnerships on a global scale, ensuring the best value proposition is delivered and always exceeds customer expectations.

Wayne is a commercial veteran having qualified, negotiated, and managed hundreds of technology contracts in the international marketplace.

Vaughan Keenan – Chief Operating Officer

Vaughan joined Connexionz from Fusion5, where he managed the successful delivery of over 100 projects. Vaughan is a certified PRINCE2 Practitioner and has 15 years' history of making significant contributions – both technical and project-discipline-related – to the successful delivery of software and technology products.

Vaughan is instrumental in turning our customers into project partners and will keep you updated every step of the way. In the background he keeps all Connexionz teams on task, ensuring quality solutions are delivered on time and within budget. Just in the last year, Vaughan has delivered 5 ITS projects very similar to GETD.

Michael Stocks - System Design Manager

Mike joined Connexionz in 2002 from Danfoss A/S, where he ran the company's R&D facility of Automatic Controls Division and was responsible for the development of a global product range. During the 1990s, Mike worked as software R & D Manager for Woodley Electronics Ltd and as senior software engineer for George Barker Ltd. Mike has 20 years of experience in software and systems development and the processes and quality systems that support them. Mike also has significant experience working with customers and partners from differing cultures and backgrounds. He has aBS (Honors), in Mathematics and Computing.

Mike will manage the deployment of the proposed ITS solution, sharing any development work with the team. He has a significant amount of experience in engineering ITS systems for Connexionz customers globally with over ten Connexionz project launches under his engineering helm.

Griffin Lauerman - Project Management

Griffin is an experienced and certified PMP, and certified Scrum Master. He has a demonstrated history of working in Business Process and Operations. Skilled in Digital Strategy, Taxonomy, Marketing, and Business Operations. He has worked for Kaiser Permanente for the last four years specializing in Brand Marketing and Content Distribution.

Griffin has been instrumental in managing high-visibility vendor relationships over the years and has delivered quality projects time and time again.

Customer Experience Manager – Wesley See

Wesley has an advantageous mix of skills – his work experience is predominantly in the IT field, and these skills are an asset in the US office. With a degree in electronics and field service experience, he provides hands-on technical support alongside our USA Field technicians. He will also bring a solid foundation of customer service.
Wesley is the primary contact for Customers once the initial project has moved into the Operations phase. He oversees the Field Technicians and works closely with our Customers to ensure "Business as Usual".

Tomas Hedman – Vehicle Electronics Engineer

Tomas has been with Connexionz providing technical support for 13 years. He has a background in radio and electronics engineering, testing, and support.

Tomas has held roles previously with major communication, technology, and radio companies like Tait Electronics.

Pam Heser & Jorge Gutierrez – Field Technician's

Pam has been with Connexionz for 12 years as a field technician. Pam has an exemplary work ethic distilled from the USA Air Force. Pam has significant experience in the installation and maintenance of all our customer's vehicles and street infrastructure.

Jorge joined Connexionz in 2019 but was working as a Connexionz contractor for 5 years previously. Jorge has 20 years' experience as a field technician. His skills include sound hardware and software knowledge and strong diagnostic and problem-solving skills. He will be the primary point of contact for the City of Racine.

SCOPE OF WORKS

Throughout this section, we will discuss Connexionz hardware and software solutions. Hyperlinks have been added to each component to provide more detailed information.

Overall Highlights

1. Overall Highlights			
		Compliant	
a.	Capture and transmit vehicle location information on a real-time basis.	✓	Our system transmits real-time locations on a configurable basis, every 1-30 seconds. Some transmissions are increased during emergency situations.
b.	Update at a rate as close to real-time as possible, no more than 2 seconds per update.	✓	1 second updates are no issue.
c.	Include iPhone, Android & mobile website apps free of charge for end user.	✓	Our core system includes a featureful public website, a "Ryde" branded white label application for both Android and iOS. More on our real-time offerings.
d.	Provide an online map-based interface for administrators to change/update route paths and bus stop locations in real-time, allowing these updates/changes to be effective immediately.	✓	Administrators can use CNX Planner to change routes, schedules, and other related metadata. Buses can be dispatched to any available route or schedule. This information is also shared wherever static schedule information is shown such as the applications and websites. More on CNX Planner.
e.	Integrate with our automated passenger counting system (APC), which is provided by Urban Transportation Associates	✓	UTA is one of Connexionz primary partners. For projects which require APC systems, we often propose UTA as our supplier. The CNX/UTA combination has been certified by the NTD at multiple customer sites. UTA has a high confidence in the quality of Connexionz CAD/AVL data when compared to competing systems.
f.	Offer one-click General Time and Frequency Specification (GTFS) for export to Google.	✓	Our system automatically updates GTFS and GTFS-RT without any clicks. More on data feeds.

1. Overall Highlights			
		Compliant	
g.	Be cloud hosted.	✓	Our solution is fully cloud hosted through Microsoft Azure.
h.	Provide optional capability and integration of real-time transit data Application Programming Interface (API), including developer documentation that allows for querying data from AVL services, with a JavaScript Object Notation (JSON) document as output. The API should provide real-time vehicle location data and estimated arrival times for vehicles as they approach stops.	✓	Connexionz has a long-standing API and has provided data to many third-party systems throughout its history. This includes XML, GTFS-RT, and JSON feeds as a standard. More on data feeds
i.	Provide Automated Voice Annunciation (AVA) for American with Disabilities Act (ADA) compliance	✓	Connexionz AVA system is fully compliant and includes audio/visual announcements inside the bus related to stops and emergencies as well as audio announcements outside the bus, related to the destination/route. More on our AVAS
j.	Integrate with Hanover and Twin Vision / Luminator signs.	✓	Connexionz integrates directly with Hanover and Luminator by way of J1708 More on Headsign Integration
k.	Have the ability for future farebox integration with the current Genfare (GFI) system.	✓	Connexionz can integrate with GFI by receiving the driver log on. We can price that option easily if you want to include it. With the single sign on we also have the option of the Connexionz system not even requiring a tablet to operate if that was of interest. We also share information with the GFI system like trip and block ID. More on GFI integration
l.	Offer playback feature.	✓	Connexionz system has playback features which allow you to view “breadcrumbs” for any individual vehicle, trip, or service. More on vehicle location reporting.
m.	Collect on-time performance	✓	Connexionz Dispatch system includes real-time views of timepoint arrivals, departures, and variances. Connexionz analysis provides reporting and auditing related to OTP on the stop, timepoint, route, and trip basis. More on CNX Dispatch.

1. Overall Highlights			
		Compliant	
n.	Record miles and hours by revenue and deadhead.	✓	Connexionz system automatically tracks revenue and deadhead time and mileage without the need for odometer entry. Part of the Connexionz system includes depot and transit center locations. All mileage is calculated accurately and included in the analysis. More on reporting on CNX Analysis.
a.	Provide a work plan for installation and start up within four months from award.	✓	Connexionz can deliver the project in full within 6 months. We've provided an indicative schedule and will deliver the final schedule after our "discovery" period.
b.	Provide in-person training for the startup and rollout	✓	Connexionz will deliver in-person training through both official/formal sessions and flexible floating sessions over 3 days. More on Training.
c.	Provide detailed explanation on the training process as future updates or changes occur.	✓	Connexionz will continue to update Racine on any changes to scope, schedule, or intent through our regular occurring project management meetings during deployment. More on project management.
d.	Explain integration with radio communication, if provided.	✓	Connexionz basic level of integration includes allowing for an "open mic" to be activated upon an alarm being activated. We would need more information to price this accurately for Ryde. Additionally, we can potentially provide integration of radio communication through the dispatch platform, we would require more information on your existing radios and radio console/software to understand how this might work.

2. Integrations			
		Compliant	
a.	Vehicle Location Information	✓	Connexionz provides vehicle location information through dispatch and open feeds.
	Apps	✓	Connexionz will provide native applications for Android and iPhone white labeled for Ryde. This is a crucial difference from our competition who often file you under their app. We will continue to support and update apps within the support agreement. Additionally, many of our customers use our data feeds to integrate with 3rd party apps like Transit. More on apps.
	Automatic Passenger Counting System (APC)	✓	Connexionz is a long-time partner/integrator of UTA. UTA attributes many of their most confident/accurate data sets to CNX/UTA properties. All UTA/CNX properties which have applied for NTD approval have been certified.
	GTFS feeds	✓	Connexionz provides GTFS and GTFS-RT as a standard, with no additional cost. More on data feeds.
	Application Programming Interface (API)	✓	Connexionz provides APIs as a standard, with no additional cost. More on data feeds.
	Automated Voice Annunciation (AVA)	✓	Our Medius onboard device is the central integration point for all connected systems. It also has text to speech which connects directly to the vehicle speakers. More on AVA.
	Signs - Headsigns, Onboard LED signs, Onboard LCD Signs	✓	Our Medius onboard device is the central integration point for all connected systems. The Medius can connect to LED systems onboard through J1708 and LCD systems using HDMI. Connexionz integrated multimedia systems are a common add-on among our customers.

2. Integrations			
		Compliant	
	Signs – Wayside, LCD Signs, LED Signs, BusFinder, Kiosks	✓	Connexionz system integrates directly with Wayside signage. The basic offering of sharing real-time information and schedules across LCDs and LEDs come with no additional software fee. Connexionz Busfinder E-Ink displays are great for locations with no power and have their own management platform. For more enhanced content, Connexionz also has options for integrated CMS systems to manage outdoor LCD display content. Any of Connexionz signage options receive emergency messages and alerts in real-time from the central dispatch system. More on signage.
	Farebox integration	✓	Connexionz integrates with a wide variety of fareboxes such as GFI Odyssey, GFI Fastfare, BEA, Cubic, and many more. More on farebox integration.

3. Automated Voice Announcements (AVA)			
		Compliant	
a.	The system shall have an integrated Automated Voice Annunciating system that uses vehicle locations and GPS geo fences to announce stops both internally and externally.	✓	Connexionz system connects directly to the buses speakers. The system makes announcements for next stops and routes/destinations using text-to-speech. More on AVAS.
b.	The system shall give the ability to create and choose which stops and routes are announced via web portal.	✓	Connexionz CNX Planner allows users to turn off/on any specific stop announcement. More on CNX Planner.
c.	The system shall give the ability to enter in how route or stop announcements should be pronounced phonetically via web portal.	Partial	Connexionz system automatically makes announcements without needing any phonetic fixing. Connexionz phonetic library has been solidly improving over its 20-year history. Mistakes with phonetics are rare and when they are found, they can be addressed by our team through a help-desk ticket.

3. Automated Voice Announcements (AVA)			
		Compliant	
			More on the Connexionz Help Desk.
d.	The system shall have the ability to edit current stop or route announcements by turning “off” or “on” via web portal.	✓	Connexionz Route Planner allows users to turn off/on any specific stop announcement. More on CNX Planner.
e.	The system shall have the ability to announce stops or routes using a live map showing the vehicles' location in real time via web portal.	✓	Connexionz Route Planner allows users to turn off/on any specific stop announcement. More on CNX Planner.
f.	When a new route or stop is created the system shall always give the ability to choose whether the route or stop is announced via a web portal.	✓	Connexionz Route Planner allows users to turn off/on any specific stop announcement after uploading a new schedule file. More on CNX Planner.

4. Automatic Passenger Counting (APC) or Digital Passenger Counting (DPC)			
		Compliant	
a.	The system shall integrate data from our existing on-board Automatic Passenger Counter (APC) equipment and transfer the data to a server for further analysis.	✓	Connexionz consistently integrates with Urban Transit Associates and has successful NTD certifications.
b.	Providing an APC system is not part of this RFP.	✓	Connexionz consistently integrates with Urban Transit Associates and has successful NTD certifications.

Passenger Components

5. Public Website			
		Compliant	
a.	Riders shall have the ability to view only routes that are of interest to them or all.	✓	Connexionz public website allows users to toggle routes of their choice on/off. More on CNX WebPortal.
b.	The system should have the ability for route remembrance for users.	✓	Connexionz public website allows users preferences and locations to be saved. The system additionally allows for a unique user login to access very specific E-mail alerts/subscriptions. More on the CNX WebPortal.
c.	The system should provide arrival estimates to give riders more details about anticipated vehicle arrival times.	✓	Connexionz public website is powered by the world's most accurate predictive arrival. Read our accuracy study in the appendix.
d.	Users shall have the System remember chosen routes from past times they have loaded the website.	✓	Connexionz public website allows users preferences and locations to be saved. The system additionally allows for a unique user login to access very specific E-mail alerts/subscriptions. More on CNX WebPortal.
e.	Vendor shall design a banner that uses customer-supplied logos/graphics that clearly identifies the Racine Transit and a web address that is easy to market to riders.	✓	Connexionz public website is fully customized for Ryde and can be on its own URL or integrated into your own. More on CNX WebPortal.
f.	The system shall provide a module that allows content to be provided on Customer's own website.	✓	Connexionz public website is fully customized for Ryde and can be on its own URL or integrated into your own, or by integrating through our API. More on CNX WebPortal.
g.	The system shall differentiate the estimated time of arrival for inbound and outbound stops along a particular fixed route.	✓	Connexionz real-time system includes both predictive arrivals and scheduled departures. More on CNX WebPortal.
h.	The system shall continuously update the web page (whenever a new estimated time of arrival (ETA) is determined, bus is	✓	Connexionz public website is updated showing moving vehicles and updated ETAs.

5. Public Website			
		Compliant	
	added/removed, etc.), without the user being required to refresh the webpage.		More on CNX WebPortal.

6. Mobile Phone Access			
		Compliant	
a.	The system should provide an interface that shows steady vehicle movement without reloading on internet-enabled mobile phones. The system should provide access to announcements on internet-enabled mobile phones.	✓	Connexionz mobile apps will be branded for Ryde and mimic the exact experience and features of the website. More on the mobile apps and CNX WebPortal.
b.	The system should allow riders to access arrival estimates via SMS text messaging (particularly for phones that may not have smartphone & web capability).	✓	Connexionz has included in our pricing a local phone number for stop ID ETA requests as well as 200,000 texts in/out. More on the SMS system.
c.	For phones with GPS capability, the system should provide geolocation features to allow riders to identify locations on maps.	✓	Connexionz mobile apps will be branded for Ryde and mimic the exact experience and features of the website. More on the mobile apps and CNX WebPortal.
d.	The system should have the ability to integrate fixed route and on-demand mobile apps allowing users to toggle between the services in one app.	✓	Connexionz can integrate on-demand information in our mobile app if it's compliant with our own app design. Alternatively, our arrivals can be integrated into other apps using our API. Finally, many customers use 3rd party journey apps like iTransit which combine our GTFS data with other first/last mile services. More on the mobile apps and CNX WebPortal.

7. Smartphone Access			
		Compliant	
a.	For smartphones (iPhone, and Android), the system should provide an interface that shows steady vehicle movement without reloading.	✓	Connexionz mobile apps will be branded for Ryde and mimic the exact experience and features of the website including smooth bus movement. More on the mobile apps and CNX WebPortal.
b.	For smartphones with GPS capability, the system should provide geolocation.	✓	Connexionz mobile apps will be branded for Ryde and mimic the exact experience and features of the website including GPS location recognition. More on the mobile apps and CNX WebPortal.
c.	Features to allow riders to identify locations on a map.	✓	Connexionz mobile apps will be branded for Ryde and mimic the exact experience and features of the website including GPS location recognition. More on the mobile apps and CNX WebPortal.
d.	The system should provide a free-to-download native iPhone application.	✓	Connexionz mobile apps will be branded for Ryde and downloadable from the App store. More on the mobile apps and CNX WebPortal.
e.	The system should provide a free-to-download native Android application.	✓	Connexionz mobile apps will be branded for Ryde and downloadable from the Play/Android store. More on the mobile apps and CNX WebPortal.
f.	Shall provide an optional notification platform for smartphones where riders can enter in a recurring schedule for impending bus arrival notifications. This should work without the rider opening the app.	✓	Connexionz real-time portal has a one-of-a kind subscription system. Users can log in and set up very specific subscriptions by day, time, trip, destination, stop, and route. These subscriptions then arrive by either Email or SMS to the rider. Connexionz has included this in our base project pricing. More on Connexionz subscription and alerts.

8. Public Vehicle Location Displays			
		Compliant	
a.	The system shall provide the ability for Customer to use new or existing flat screen monitors to display a version of the System that requires no user interaction (for example, an LCD screen in a building lobby).	✓	Connexionz can display route arrival information on any existing LCD sign. This includes installation of a new sign driver. We've priced this as an option. More on signage.
b.	The vendor shall provide the option for a minimum of four (4) outdoor signs that would display real time bus information for the system or specific routes that are suitable for Racine Transit's outdoor environment.	✓	Connexionz has provided options for outdoor LCD and LED signage. We've priced this as an option. More on signage.
c.	The vendor shall be responsible for ensuring that all maps, routes, and information properly displays and automatically refreshes on LCD screens at all times.	✓	Connexionz signage are integrated systems which are consistently updated with new information, ETAs, alerts, and announcements.
d.	The display shall include route name and the ability to differentiate routes by design and color.	✓	Connexionz LCD display technology can include different route colorings.
e.	The display shall include the ability to identify a specific vehicle and its associated route.	✓	Every individual trip/arrival is associated with its own ETA.

Management Components

9. Management Software Requirements			
		Compliant	
a.	The system shall provide a dashboard for dispatchers to monitor current vehicle locations, ability to receive and send canned messages, track and monitor alerts.	✓	CNX TransitManager provides real-time and historical views of vehicle statuses and alerts. More information on CNX TransitManager.
b.	The system shall provide real-time graphical displays of vehicle location using map interface.	✓	CNX TransitManager provides numerous map views which offer context on the entire service territory, certain routes, certain trips, certain drivers, and certain vehicles. More on AVL views.

9. Management Software Requirements			
		Compliant	
c.	The system shall provide a management interface to allow assignment of buses to routes by dispatchers.	✓	CNX TransitManager allows dispatchers to assign blocks, trips, and routes to vehicles in real-time or for future trips. More on CNX TransitManager.
d.	Interface should be intuitive and simple to use.	✓	CNX TransitManager has a recently refreshed GUI. Our solution is often described as simple and affective. More on CNX TransitManager.
e.	The system shall allow announcements to be posted immediately or in advance for posting at pre-defined times. The system shall also allow announcements to be removed automatically at a pre-defined time in the future.	✓	CNX TransitManager allows service alerts and announcements to be made, changed, and scheduled instantaneously. More on service alerts and operators' announcements.
f.	The system shall have the ability to enter/change route data ad-hoc without contacting the Vendor	✓	All route pattern, stop, and schedule changes are made in CNX Planner. More on CNX Planner.
g.	The system shall have the ability to enter/change stop data ad-hoc without contacting the Vendor	✓	All route pattern, stop, and schedule changes are made in CNX Planner. More on CNX Planner.
h.	The system shall provide historical playback of vehicle locations.	✓	Connexionz system has playback features which allow you to view “breadcrumbs” for any individual vehicle, trip, or service. More on vehicle location reporting.
i.	All back end administrative tools and functions shall be available on cloud-based web portal. Solution must be 100% cloud based so that login is able to take place via a web portal at any time of the day.	✓	Connexionz solution is fully cloud hosted in Microsoft Azure. Some interactions are done over a hosted client (like CNX Planner) and some through the web. We don’t require any assistance or resources from your IT department and CNX Dispatch can be accessed from anywhere, including home/remote locations.
j.	New accounts for login to the system must be able to be created almost instantaneously upon request. There should be at least three options for account privileges (dispatcher, viewer, admin, etc...)	✓	Connexionz solution includes nearly 12 different user privileges/roles. Any one users' role is tied to their existing Windows username. Roles can be set up in the back end of the system.

9. Management Software Requirements			
		Compliant	
k.	Certain management functions (e.g. assigning buses, activating routes) shall be allowed from internet-enabled smartphones.	✓	Although not ideal, some dispatching functions can be used over a mobile device.

10. Reports			
		Compliant	
a.	The system shall provide web-based reports that allow customers to run the transit system more efficiently. Desired reports include:	✓	Connexionz offers over 100 canned reports which all have custom query capability.
	i. On-Time Performance (available by driver, stop number, and vehicle)	✓	More on reports.
	ii. Headway Report	✓	More on reports.
	iii. Travel time Report	✓	More on reports.
	iv. Hours in service Report	✓	More on reports.
	v. Mileage Report to include total mileage, scheduled, and actual by day, route, driver and vehicle	✓	More on reports.
b.	Ability to see all of a particular vehicle's arrivals and departures for the day	✓	More on reports.
	i. Off-Route Report	✓	More on reports.
	ii. Speeding Report	✓	More on reports.
c.	Reports shall allow for time-based comparison (e.g. last week vs. this week) and historical reporting.	✓	All reports are customizable by date and date range. More on reports.
d.	Reporting data should be captured and remain accessible for at least three (3) years.	✓	Data remains accessible whilst you are on a support agreement with us. Backups can be pulled at any time. More on reports.

10. Reports			
		Compliant	
e.	Reports shall be exportable to standard Microsoft document format (Excel, Word) and/or PDF format and should be available to clients instantly.	✓	Reports can be exported to PDF or saved as an XLS file. More on reports.
f.	History tool that allows administrators the option to select viewing the entire system at once, by route, or by bus.	✓	Any report is configurable using column and row filters. This includes dates, days, times (hours/minutes), drivers and vehicles (individually or grouped), routes, trips, blocks, and much more.

11. Support			
		Compliant	
a.	The vendor will provide 24/7 support when needed in case of severe emergencies.	✓	Connexionz has a full Customer Service / Support Portal. We are accessible via phone which is managed by a 24/7/365 Call Centre, web-based Service Desk, email which is grouped by On-Call Roster, Operations Manager and Customer Experience Manager.
b.	The vendor should be accessible via phone, web and e-mail, at a bare minimum.	✓	Connexionz has a full Customer Service / Support Portal. We are accessible via phone which is managed by a 24/7/365 Call Centre, web-based Service Desk, email which is grouped by On-Call Roster, Operations Manager and Customer Experience Manager. More on support.
c.	Turnaround response time of Vendor for any mission, a critical component of the system, should not exceed 3 hours.	✓	Our standard SLA Agreements currently in place with our Customers has a response time to our Customers for Priority Level 1 (Mission Critical) is 1 (one) hour. More on Service Levels and resolution times.
d.	The vendor shall provide training to all dispatchers, supervisors, administrators, and maintenance technicians prior to the deployment of the system.	✓	Connexionz believes that delivering effective training is a critical measure of the success of our projects. We have a standard format for the baseline education and design, delivered in real-life business scenarios. The training takes place prior to official deployment/acceptance. More on Training.
e.	The vendor shall also provide optional web-based training for all dispatchers, supervisors, administrators, and maintenance	✓	Connexionz has topic-based video training available on demand for all system features. Additionally, during the first year of deployment we can

11. Support			
		Compliant	
	technicians prior to the deployment of the system and on an as-needed basis for future trainees.		provide up to 8 free hours of auxiliary training over the web for anyone who needs it. More on Training.
f.	The vendor shall provide help manuals to allow resolution of straightforward items as expeditiously as possible.	✓	Connexionz has topic-based video training available on demand for all system features. More on Training.
g.	Support shall be available during normal business hours. Standby support shall be available at all other times, including nights, weekends, and holidays.	✓	Connexionz has a full Customer Service / Support Portal. We are accessible via phone which is managed by a 24/7/365 Call Centre, web-based Service Desk, email which is grouped by On-Call Roster, Operations Manager and Customer Experience Manager. More on support.
h.	The vendor shall protect and backup, for a minimum of 60-days, any software configuration settings, any Customer provided data that has been modified for use by the software, and any new data produced by the software itself.	✓	Connexionz can take backups once every 30 days for the City of Racine. These backups will include any configurations, settings, or data included in the system.

12. Hardware			
		Compliant	
a.	Racine Transit is seeking the most user-friendly system while requiring the least maintenance. The preference would be to have no onboard servers and the ability to push all information out to tablets or a comparable device.	✓	Connexionz system is fully cloud hosted and has been trusted for over 20 years. All data onboard is passed to the cloud hosted system. Most of our customers believe it to be simple, effective, and somewhat utilitarian. Most of our customers move well past their initial agreements to sign long-term agreements with us. Most of our customers have been with us 10+ years.
b.	At the time of installation, the hardware must be the current technology available and compatible with the Vendor's software.	✓	City of Racine is receiving Medius G2 and K86 Android, both developed and released in 2020, as our most current hardware. All past hardware is still backwards compatible with the system.

12. Hardware			
		Compliant	
c.	Hardware shall remain under warranty for one year and shall offer options for extending the warranty for up to 5 years	✓	Our standard hardware warranty is for 2 years. Extended warranty pricing has been included in the price sheet. More on Pricing.
d.	The vendor shall install a power conditioner in each vehicle to ensure proper voltage to the tracking unit to increase device stability and performance.	✓	This specification reflects a standard installation for Connexionz
e.	The vendor shall install an inline power fuse to tracking units to prevent possible power short conditions and device failure.	✓	This specification reflects a standard installation for Connexionz
f.	Should a malfunction occur which requires hardware to be replaced-- during the initial contract; the replacement equipment must be new with the latest technology at the time of replacement and/or installation.	✓	Connexionz will always deploy our latest model of hardware. All hardware is backwards compatible. We will never force an upgrade. All hardware comes with 2-year warranty.
g.	Hardware shall offer the capability for dynamic interface additions/changes over time. Examples should include driver login, route selector, and passenger counting input, on-time performance indicators, etc.	✓	All of these named features are already included. Connexionz core VLU, the Medius is expandable to include real-time engine diagnostics, multimedia systems, contactless fares, TSP, and much more. More on the CNX Medius.
h.	Hardware shall integrate additional components directly into existing hardware. Examples should include Automatic Voice Announcement (AVA) systems for American Disabilities Act (ADA) compliance and Automatic Passenger Counters (APC's).	✓	Our core system is built upon one onboard computer (Medius) and the optional CNX MDT. These are connected to a cellular router. There is no need for any additional equipment for integration purposes. More on the CNX Medius.
i.	Hardware shall receive software updates over the air	✓	Medius can be updated through the air and includes Bluetooth capability for easy maintenance. More on the CNX Medius.
j.	Vendor shall provide future support options for hardware over the life of the contract	✓	Connexionz will always deploy our latest model hardware. All hardware is backwards compatible. We will never force an upgrade. All hardware comes with 2-year warranty.
k.	The mobile data terminal (MDT) shall have a scratch free display with damage-resistant glass to allow easy readability.	✓	More on Connexionz MDT.

12. Hardware			
		Compliant	
			With GFI integration, the MDT becomes optional.
l.	The MDT shall be able to withstand shock and vibrations generated by transit vehicles.	✓	More on Connexionz MDT. With GFI integration, the MDT becomes optional.
m.	The MDT shall be drop resistant, vibration resistant, atmosphere certified, and MIL-STD-810G and IP67 certified.	✓	More on Connexionz MDT. With GFI integration, the MDT becomes optional.
n.	The MDT shall operate in ambient temperatures from -6F to 140F (-21C to 60C), and ambient humidity up to 95% RH non-condensing.	✓	More on Connexionz MDT. With GFI integration, the MDT becomes optional.

13. Software			
		Compliant	
a.	At the time of implementation, the software must be the current version and compatible with the Vendor's hardware.	✓	CNX TransitManager is on version 5.1 CNX TransitManager is updated consistently and any customer with a support agreement receives those updates.
b.	The vendor must always ensure that Racine Transit is utilizing the latest approved software version available.	✓	CNX TransitManager is on version 5.1 CNX TransitManager is updated consistently and any customer with a support agreement receives those updates.

14. Maintenance			
		Compliant	
a.	Vendor to include maintenance/hosting agreement for the first year in the base cost.	✓	See pricing.
b.	Vendor to provide an annual breakdown of cost for the maintenance/hosting agreement for an additional nine 1-year renewal options.	✓	See pricing.

15. Delivery and Installation			
		Compliant	
a.	The City prefers a Vendor who can deliver and install a fully functional, tested and operational system four months after award.	✓	Connexionz can deliver this system in 4-6 months from award.
b.	All proposals must include a Gantt chart or similar detailed, step by step project management timeline, outlining specific tasks, responsibilities, and dates from start to finish for this project.	✓	Connexionz has included the Gantt Chart. See Schedule.
c.	The chart must include specific dates when Racine Transit personnel must be available to work with the Contractor.	✓	Connexionz has included the Gantt Charts. We require City of Racine staff available during discovery meetings, our weekly or bi-weekly remote project catchups, our training, and for final vehicle and system sign-off. See Schedule Project Initiation – 3-Feb-2021 Discovery Meeting – 8-Feb-2021 Training – 20-May-2021 Vehicle Inspection & Test Sign-off – 22-Jun-2021 Final Acceptance – 14-Jul-2021

16. Vendor Compliance - Connexionz has followed the City's requirements Scope of Works.
17. Pricing Format – Connexionz has adhered to the City's pricing format with the Scope of Works. Refer to Pricing.

PROJECT UNDERSTANDING

We have reviewed all the requirements detailed within the RFP and addendums and are confident that all components of the Connexionz Intelligent Transportation System suite of hardware and software are 100% compliant with the City of Racine's requirements.

Of equal importance, our team does deployments differently. You will come to discover that you are surrounded by transit technology professionals who make roles and responsibilities clear throughout. You will know our folks on a first name basis.

Our approach is one which allows you to have one vendor relationship to provide the full scope of technology, now or in the future. You will notice that having one single onboard device, the CNX Medius, makes the system easier to manage and maintain.

Connexionz offering is straight forward:

- No absorbent license fees
- Quality on-board hardware with 2-year warranty
- Future integration capable
- "Ryde" branded iOs and Android applications
- Real-time portal and SMS ETA request system
- Long history of integration with Urban Transit Associates.
- Most accurate arrival predictions available. proven through 2014 study.
- Experienced integrator with GFI, Twinvision, Luminator, Hanover, and REI.

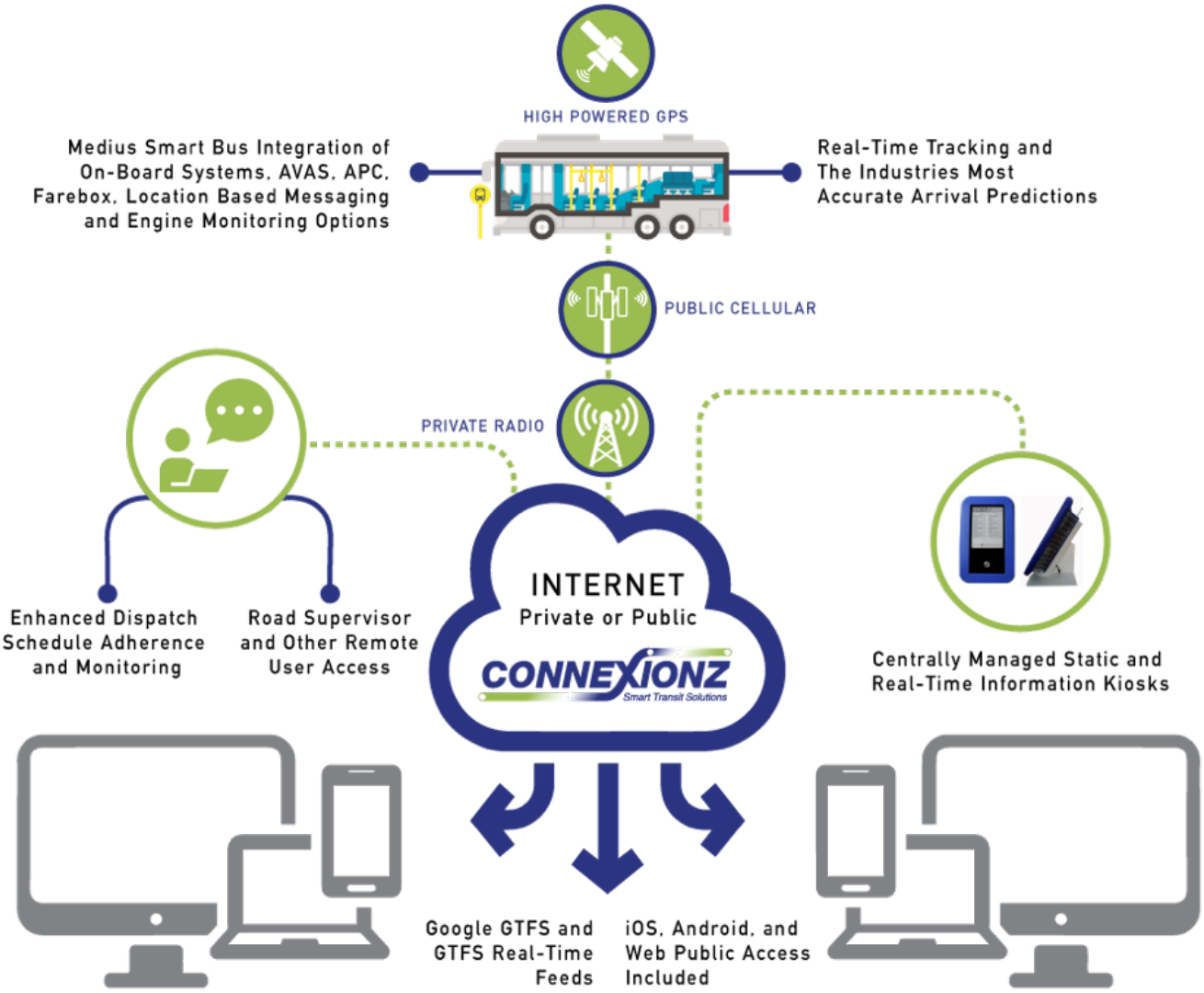
Connexionz understands that a strong on-board hardware solution is the first step to a successful ITS installation.

Our Vehicle Logic Unit; the ***CNX Medius*****,** has been used by Connexionz for over 15 years. Currently in its 4th iteration, our hardware solution has always been designed around integration and is built for transit. It meets the specifications listed and provides a clean interface for all on-board systems and sensors. The CNX Medius enables future expansion to virtually all related ITS technologies. The Medius is backward compatible and we never force you into an upgrade.

The Mobile Data Terminal (MDT) we propose is android based, rugged for transit, and includes software which will assist your vehicle operator in quick and efficient decision making.

The CAD/AVL system; ***CNX TransitManager*** delivers results for the agency. Many project goals are met quickly and effectively immediately after deployment.

While API's and data exchange has always been our focus, we're open to creating even more 'views' into our solution to satisfy new 3rd party integrations, throughout our relationship.



Connexionz Smart-Bus Technology – CNX TransitManager

We describe various software elements collectively referred to as ***CNX TransitManager*** throughout this RFP response. While we do not list or detail all the CNX TransitManager functionality here, we cover the ITS service's capabilities as relevant to your needs.

We are committed to the evolution and usability of CNX TransitManager. Connexionz will monitor, service, and deliver updates to our ITS services and applications at least once a year, introducing additional functionality and features. This will continue for as long as you have any form of service agreement with Connexionz.

We've presented maintenance and support option years which keep the entire system updated, maintained, and supported without changing your support costs. This means you will never have to worry about using unplanned operating expenses related to fleet size changes or growth of scope.

Our support cost is our support cost, whether you add options or not.

CNX TransitManager Provides mid-size transit agencies with a highly configurable yet practical integrated suite of applications and services that will help you to better manage, monitor and optimize your fixed route services.

- Developed using Microsoft tools and is based on MS SQL Server 2012 R2 Data Base and MS Windows Server 2012 R2 64bit Operating System.
- Manage accounts and assign multi-level user access.
- Fully hosted applications

CNX TransitManager comprises these Primary Software Modules and Applications:

CNX DISPATCH (CAD) APPLICATION

- Manage and monitor your fleet of revenue vehicles.
- Stay aware of exceptions to service such as late/early vehicles off-route, emergency alarms, and more.
- Ability to communicate important service information to wherever needed.
- Create important service alert messages to send out to the public.

CNX ROUTE PLANNER

- Manage routes, stops, automate announcements, and displays. Create Single-Sign on commands for integrated equipment with simple one-click action.
- Control and generate operator messages for electronic displays (LED/LCD) in real time.
- Independently update schedule and route data which flows to important data feeds

CNX ANALYSIS PORTAL

- Generate and print comprehensive, real-time system analysis and service performance reports dedicated to improving service.
- The world's leading arrival prediction algorithms, according to independent studies
- Produce important NTD statistics for mileage, deadhead, and ridership.

CNX MEDIA PLAYER

- The media planning software that allows agency to easily organize rich media content on in-bus LCDs.
- Agencies use these solutions to upload digital Title VI materials, agency service info, and revenue producing ads

CNX WEB PORTAL

- 'Satellite' and 'Road Layer' views, deliver powerful, live, and intuitive real-time stop and bus location, service alerts, and other service information to the public.
- Riders can subscribe to stops and trips of their choice and get very specific E-mail notifications through a unique login

CNX MOBILE APPS + FEEDS

- Provide a handheld Real-Time Passenger Information (RTPI) and ticket purchasing for your ridership.
- App information is easily maintained through the route planner software.
- Application is branded for 'Ryde Transit' making it easy to find
- 3rd party feeds allow for easy integration to outside applications and efforts.

CNX DISPATCH

CNX Dispatch, is an essential component of our ITS, on its' own cloud hosted server, with redundancy. Includes provision for up to 10 licenses from any fixed PC or mobile device. The Dispatch interface is configurable to suit the user and a customized selection of functions can be made available to authorized members of your workforce.

Dispatch allows system users to:

- Monitor and manage all fleet operations in real time
- View vehicle position, speed, on-time status
- View by individual vehicles or stops, by trip, by route, or entire system
- Assign vehicles and drivers to routes, blocks, trips
- Control of electronic displays (LED/LCD)
- Text and pre-defined text messaging to MDTs
- Manage route and stop info, including timepoints, stops on route, or flag stops
- Monitor alerts and alarms from onboard systems. Respond to incidents.
- Review, save, share "replay" of historical data for incident reporting.
- Enter exceptions to OTP reporting.
- View and generate a wide array of system analysis reports
- Distribute important service alert information to the public

CNX Dispatch application enables transit operational staff to accurately monitor and manage fleet activity in real-time. Each user can see what is happening, as well as immediately review and replay historical data. The amount of historical data is limited only by your recording medium or server's storage capacity when hosting your own solution. Or, under our CNX cloud hosted software option, we can include historical data if you need.

Multiple vehicles can be seen on a GIS map or in list view alongside other relevant information.

CNX Dispatch enables:

Dispatch staff to monitor every service/vehicle in real time so dispatchers know when a bus has started early, turned off route or is running outside accepted operating rules for the trip.

Customer service staff to respond to passenger, supervisor, or bus operator inquiries with confidence, delivering relevant information (ahead/behind schedule, deviation from route, etc.)

Supervisory staff to monitor whole trips rather than only one timing point, and individual drivers.

CNX Dispatch can be accessed over the Internet using a remote desktop connection (RDP) into your internal network and via wireless networks when out of the office.

Supervisory and management staff can also access the system when on the road via any cellular broadband networks. ***CNX Dispatch*** interface displays information based on the block (interlinked trips), vehicle, route, and roster, making it easy to identify all operators, vehicles, and their locations. This information is displayed in tabular and map views and both can be configured to suit the specific dispatcher.

Operator-Generated Messages

Operator-generated messages are managed from any authorized internet-enabled device.

Authorized personnel can select and send a pre-defined message to bus drivers. We can also create free text messaging to bus drivers upon request although we advise against this. Text messages are received by the operator on the ***CNX MDT*** or road supervisor with a mobile Internet-enabled device. We generally limit text-based messaging between ***CNX MDT*** and dispatch operator to the use of canned messages for safety and operational reasons.

Authorized dispatchers will be able to manage information displayed on wayside electronic signage and the public website from the same application. Individual signs can be selected to provide local information to the public, such as route detours or upcoming road closures.

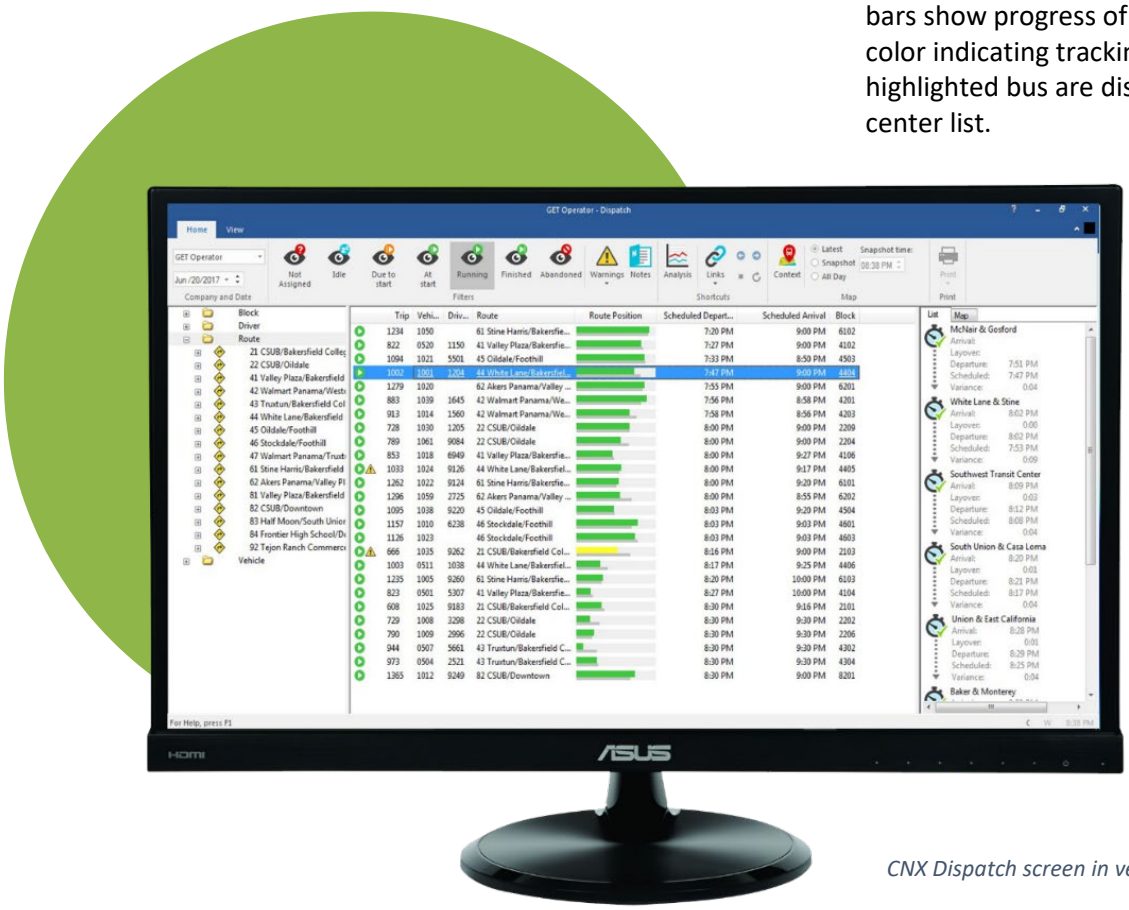
Real-Time Fleet Visibility

We show a screenshot of the default real- time view from ***CNX Dispatch*** below. All demand response and fixed-route vehicles are shown on the Open Street map used by the ***CNX Dispatch*** application. Open Street map's professional series Geographic Information System (GIS) data to power geolocation- based applications.

Unlike competing GIS data and public systems, such as Google maps, OpenStreetMap GIS data includes map layers, road layers, road speed layers, and sites of local importance. OSM updates its dataset at least once a quarter (Google updates, on average, once every 18 months) and is considered the leading tool for all serious geo-location and fleet management applications.

We import a selection of GIS and SHAPE files from third-party GIS systems. General Transit Feed Specification (GTFS) is our preferred import and export methodology.

In the example below, a route is selected from the menu on the left, and all related services running on that route are displayed in the center list. The green bars show progress of individual buses with the color indicating tracking. Trip details for the highlighted bus are displayed in the box beneath the center list.



CNX Dispatch screen in vehicle list view

This screen is the commonly used for fleet management purposes, displaying the entire transit network at a glance to facilitate quick interpretation of performance.

CNX Dispatch displays the current speed of each vehicle on fixed route trips. In the screenshot below, the GIS map view shows the miles per hour for two selected buses. Dispatch staff have access to all ETA information, for every stop serviced, so operators can efficiently provide callers with real-time service information.

Users can zoom in and out on map views using their mouse or the toolbar at the lower right of the map window.

Determining the current position of all vehicles – either in real time or within a specific period is also done in the context map.

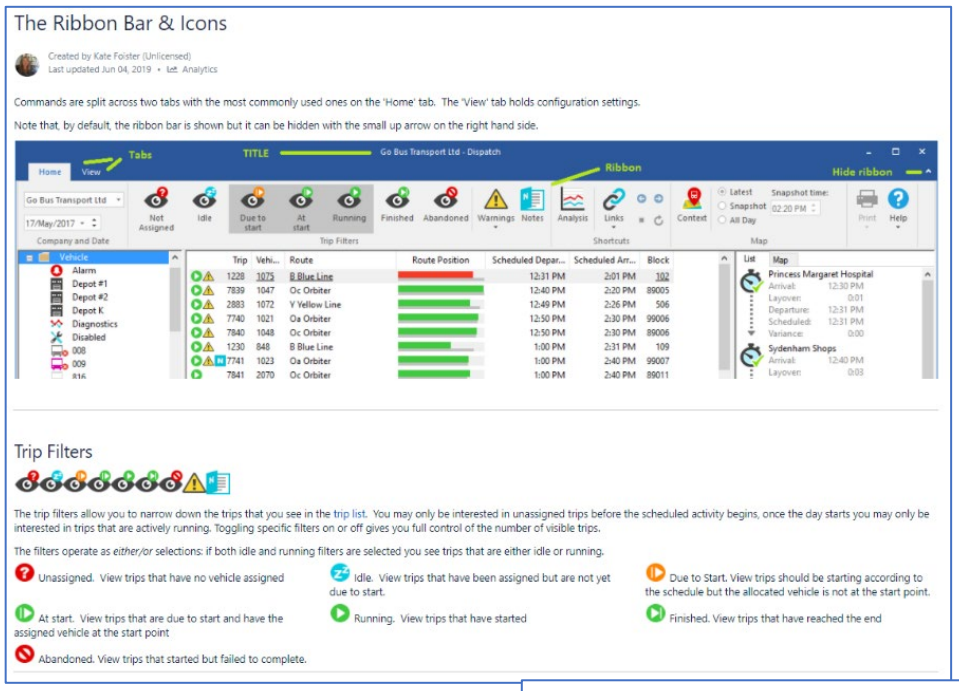
Being able to locate vehicles and accurately assess each vehicle's performance against its scheduled time is critical. An accurate prediction allows customer service staff to provide high-quality information and

continuously develop better tools to create service efficiency. Therefore, a highly valued function of ***CNX Dispatch*** is the ability to determine real-time adherence to schedule.

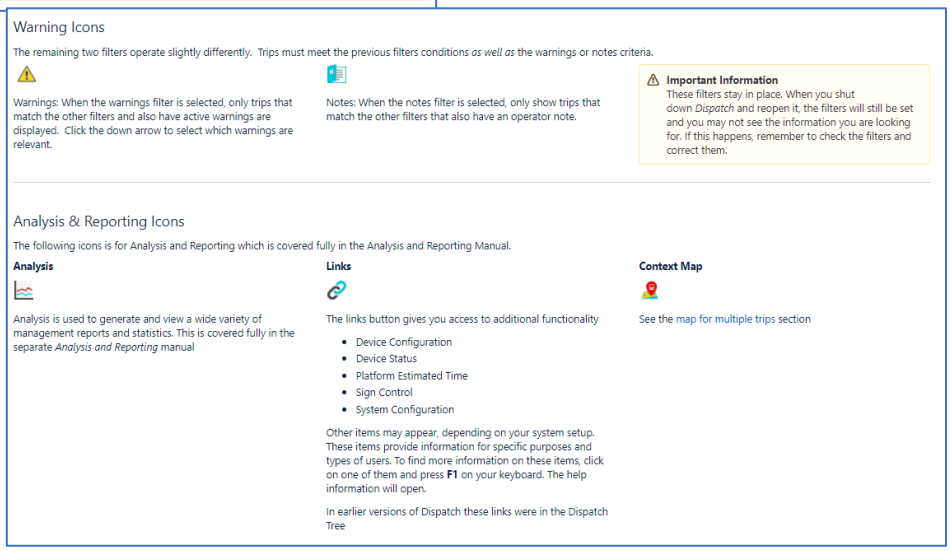
Managers and dispatchers can scan their screens to instantly establish the status of any buses operating. In the table-list view screen, the trip-time-elapsed function is shown in the route position window mid-screen. In the screenshots below, the grey lower bar is the "scheduled" position that the vehicle should be in, and the upper green bar is its actual reported position.

Screenshot of CNX Dispatch in Vehicle Map View

CNX Dispatch is very flexible and there are many ways to find, sort, and display information related to transit fleet performance.

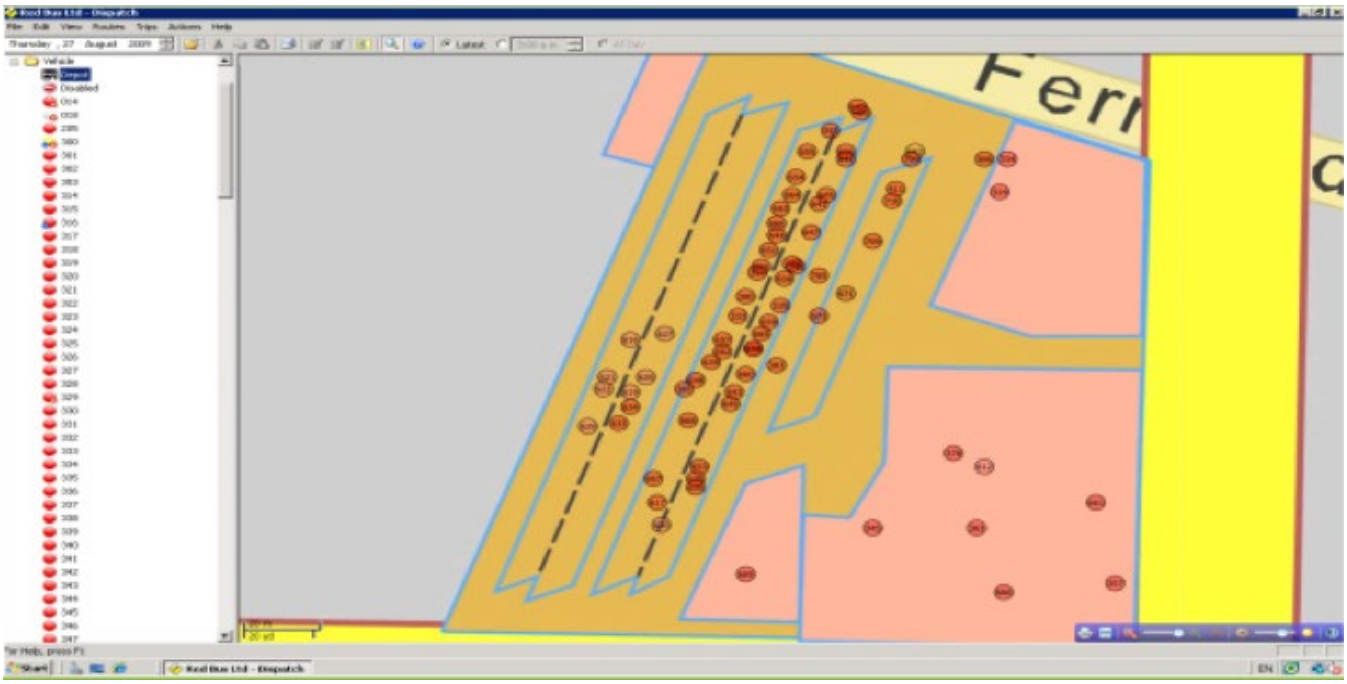


Screenshots taken from Connexionz' Knowledge Base for customers to access help online



Yard Maps

A Yard Map is a standard feature of the system. Each operator can select a view of the vehicles in their yard, as illustrated in the screenshot below. For large depots, this function allows dispatchers to locate each vehicle, then assign on a 'first off the rank' basis without having to physically visit the yard.



Schedule information can be imported through formats including: CSV, Excel, and interfaces with Trapeze, Hastus, TMS, Init, Google GTFS and other dedicated scheduling applications.

Real-Time Vehicle Location Monitoring – AVL maps

Connexionz offers customizable ‘executive view’ maps which allows dispatchers to customize cycling views of the most pertinent service information and alerts. Screens can cycle maps of geographic zones, routes, lots, vehicles, and much more.

The AVL maps offer a high-level real-time view of all fleet and locations. (useful as a 'revolving wallboard' on a 2nd screen or displayed in reception or management offices).

The Maps include placement and status of your fixed route fleet; plus, dial-a-ride and fleet vehicles if tracking. We can discuss with you what the best settings for your initial AVL views and how they can be altered and customized whenever needed by you.

CNX PLANNER

Allows transport planners to configure and maintain information on routes, bus stops, traffic intersection configurations, buses, and schedules. Existing routes can be imported into ***CNX Planner,*** new routes created and configured which inturn can be exported to other applications. ***CNX Planner*** simplifies the time needed to maintain your current routes, and to design and implement new routes in house.

- Serves as an asset management system for stop data, such as shelters, seat information, etc.
- Stop changes and updates can be entered directly into the system easily and in house.
- Interlinking between routes, stops, systems, and stations are easily visible and configurable.
- Edit and configure location-based audio announcements in AVAS.
- Import data from third-party planning software systems and run-cutting platforms including other GTFS.
- Contains quick links to all the real-time feeds Connexionz produces, including GTFS, GTFS-RT, XML, HTML, and other options by request.

CNX Planner has all the tools you need to manage the future expansion or changes to your routes or stops

CNX Planner pulls together information on routes, bus stops, traffic intersection configurations, buses, and schedules. The information seamlessly changes when routes are added or modified, bus stops are relocated and intersection configurations altered to maintain ultimate system performance. This is then reflected in *CNX TransitManager.*

CNX Planner is a GIS software tool that allows transport planners to configure and maintain the static information needed for the system. Existing routes are imported into *CNX Planner* using popular file types like GTFS, XLS, and GIS., and new routes built and configured that, in turn, can be exported to other applications. CNX Planner greatly simplifies the time needed to design and implement new routes and makes it simple to deploy service changes, detours, and single- sign-on triggers. *CNX Planner* produces driver turn sheets in MS Word format.

Other approved systems can update route information into the *CNX TransitManager* system.

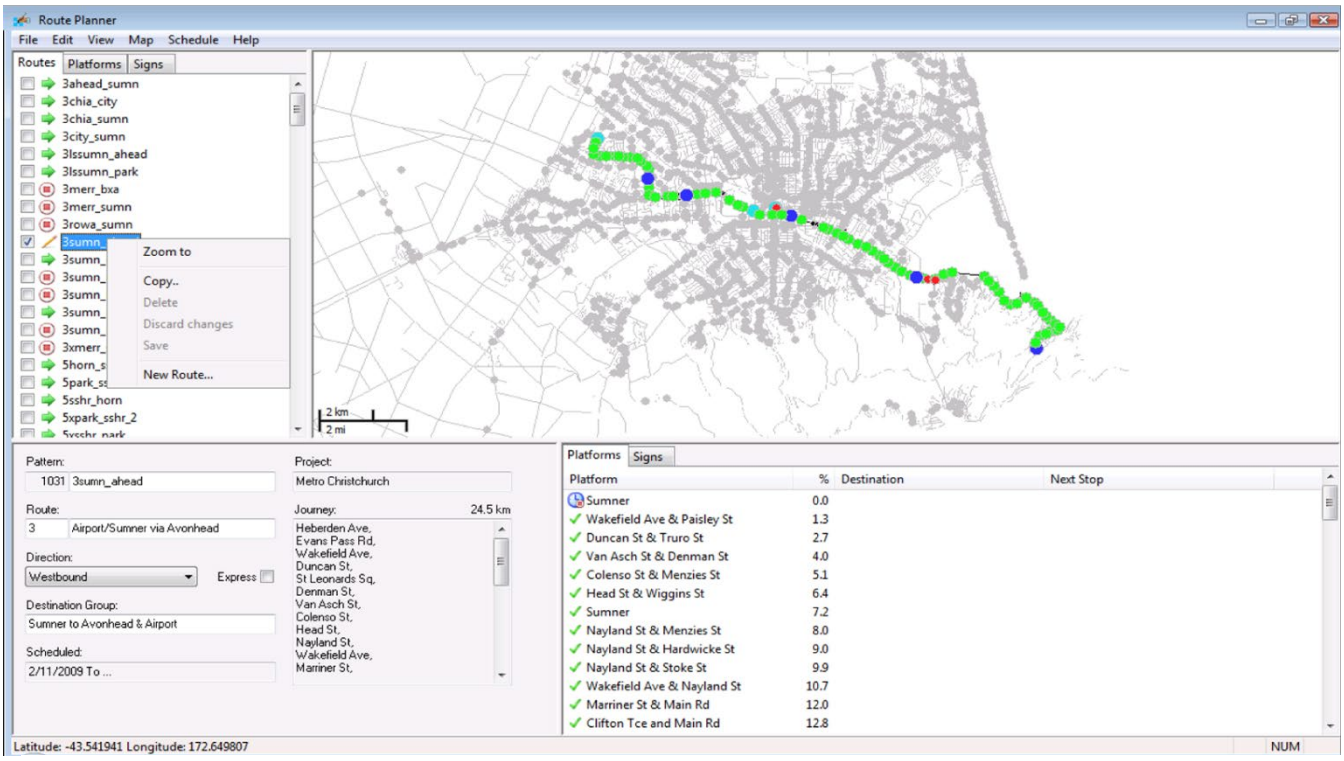
CNX Planner is used as an asset management system to store relevant bus stop data such as shelters and seat information. When a bus stop is relocated, the update should be entered directly into the system, and the appropriate adjustment made to the other applications that use this data, including the public web map and Google Transit.

CNX Planner's map view highlights the selected route and provides a list of platforms along the way with a separate properties pane showing details. A context menu allows new items to be created and modified, and the symbols displayed on the menu designate a route or a sign.

CNX Planner enables editing, configuration, and location-based audio announcements when used in conjunction with on-vehicle Next Stop Annunciation hardware. *CNX Planner* is used to organize all metadata for the latest GTFS specification. This includes route names, fare zones, route colors, and more.

Managing Routes

Managing routes effectively and efficiently builds a strong base for the greater responsibility of providing successful passenger information in real-time. *CNX Planner* makes managing routes within a CAD/AVL application simple and comprehensive. It makes the interlinking of routes, stops, systems and stations easily visible, fulfilling customer expectations. As expected, the *CNX Planner* platform is used to manage and export your google data.



CNX Planner in route view

Zoom in on the route path for greater detail using the mouse. The route geodata is the physical path traveled by the route, also known as the route pattern.

The route pattern is represented in the map window as a series of interconnected lines or segments overlaying the road network, with arrows to show the direction of travel.

Each route is displayed in grey and changes to black when selected in the menu. Color codes show the status of each platform on the route. The green tick icon indicates the route stops at that platform; a red cross icon indicates the platform is a candidate (route passes but does not stop); a clock icon indicates the stop is a timing point; and a clock with the red icon indicates the platform is a schedule adherence point.

The operator drags and places each node of the polyline by using the mouse and keyboard controls to draw a new route or amend an existing one. To demonstrate this, we show one of the polyline nodes moved from Pages Road to a new position on Tomrich Street.

The route geodata is supported by metadata which describes the route, its direction and name. It's displayed in the properties pane beneath the main window to the lower left, as shown below.

The Route Pattern Number and Name identifies each route. However, different physical paths can share the same route name and number; for example, there may be several paths traveled between stop locations. Each one has a different pattern name, but all share a common route name and number.

Route and Schedule Database Handling

Amendments and additions to routes are managed by *CNX Planner,* an intuitive and user-friendly application integrated within the *CNX TransitManager* application. Full training is provided for operators.

CNX TransitManager allows for the import of schedules based on common definitions, predominantly in a GTFS or CSV-based format. Trip elements in general include:

- Operator ID
- Time points
- Service ID
- Block number
- Trip number

Managing Signs

Any real-time display or announcement is entered once, as text, into *CNX Planner* using the sign management tool. The info distribution system updates automatically so that sign displays, IVR data feeds, and the on-vehicle announcement systems reflect the most recent data loaded. Signs can be updated individually or by route, and status updates can be sent in batches to remote electronic displays to save time.

CNX Dispatch application is used to monitor the health status of each display. Senior system operators are permitted to send free text messages via Dispatch to be displayed by drivers.

CNX ANALYSIS AND REPORTING

CNX TransitManager stores LARGE amounts of data—by bus, driver, and trip— as well as historical data, all via the CNX Dispatch application or via any internet-enabled device (security policies apply). *CNX TransitManager* can generate data required for NTD reporting, including passenger miles and revenue miles, and presents APC reports in a variety of formats that add value.

CNX Dispatch provides useful information for incident events, e.g., a speeding driver, a bus accused of damaging a parked car, or a passenger claiming his bus never turned up. Individual trip data includes times against location, driver, speed, and trip performance by timing point.

Data: mileage, deadhead, and trips ran will be crucial for your S10 reporting.

In ***CNX Analysis***, trip data is transferred nightly and available the next day (except real-time vehicle passenger loadings).

Maintenance information is available from *CNX Analysis* on data stored by bus, including reporting response rates and ODBII (vehicle diagnostics) data. Schedule data based on travel times and passenger counts are stored by date and trip number.

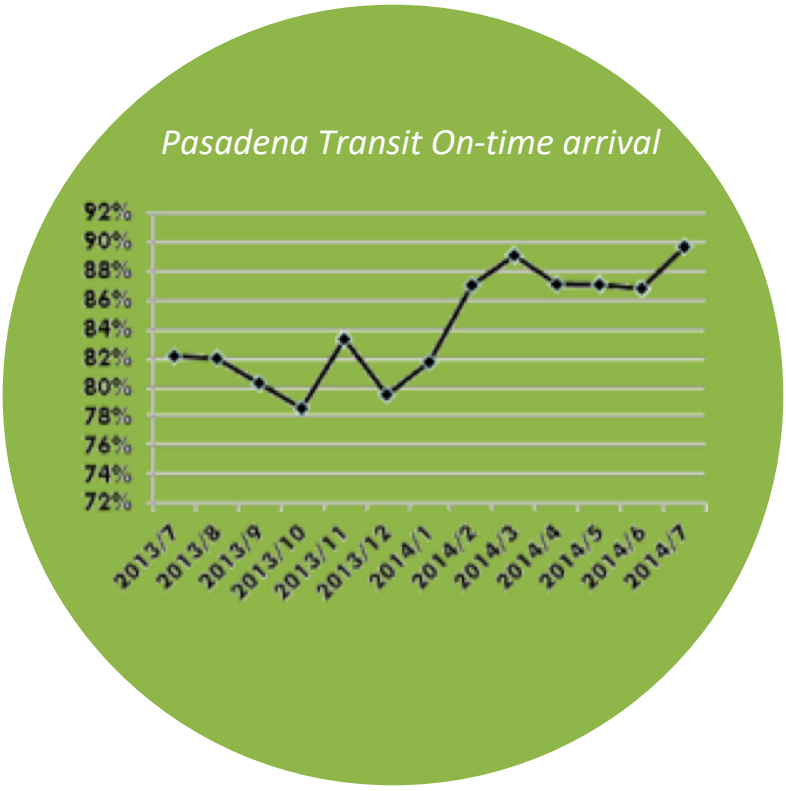
CNX TransitManager ensures data is owned by you in perpetuity.

There are no charges for the generation of ANY reports available through the CNX Analysis suite; all reports are yours to produce whenever you need them.

Reports

A successful ITS platform comprises many parts.

The fundamentals of a successful deployment are the powerful hardware, reliable and proven software applications, and road-tested real- time prediction algorithms. The true return on investment will be revealed when all those pieces work together to produce accurate data. Connexionz is confident of its reporting module and is proud to report Pasadena Transit's positive results. Pasadena Transit experienced a rise of almost 11% in monthly on-time performance immediately after Connexionz' deployment. Furthermore, early buses dropped from almost 6% of arrivals to near nil. Performance improvements continue to be recorded.



Exception reports are pre-formatted Structured Query Language (SQL) queries that return data in an easily read and understood report. The trip exception report is an Internet-enabled service. Exceptions include missed trips, late assignments, early departures, late departures, time-point early departures, and time-point late departures. The summary report for all exceptions gives management an instant overview of how the system operated for a particular day. The screenshot shows a basic summary of exceptions.

This same report can be generated for any combination of days, weeks, or months using the Period drop-down menu.

Maintenance | Passenger Counts | Travel Times | Trip Exceptions | System Overview

Project	Company	Exception	Notes	Route	Period
Santa Clarita Transit	MV Transit	All	All	All	Monday, July 20, 2015

1 of 1 Detail

Exception	Count	Trip %
Late assignment	5	0.8%
No assignment	38	6.2%
Missed trip	12	1.9%
Early departure	8	1.3%
Late departure	39	6.3%
Very late departure	3	0.5%
Timepoint - early departure	49	5.8%
Timepoint - late departure	297	21.7%
Timepoint - very late departure	17	0.6%
Trips with one or more exceptions	234	37.9%
Trips accepted by regulator	0	0.0%
All Trips	617	

The screen below shows a detailed report for the same period as the summary to the left.

Trip			Driver	Route	Exception				Notes
7/20	4:45 AM	655	521347	12 - Inbound	Timepoint - early departure	-1	Railroad Ave & Market St	☐	
7/20	5:15 AM	687	521332	1 - Inbound	Early departure	-8	Parker Rd & The Old Rd	☐	
					Timepoint - late departure	7	Rye Canyon Rd & Ave Stanford		
7/20	5:28 AM	266	522980	5 - Inbound	Early departure	-2	Sierra Hwy & Vasquez Canyon Rd	☐	Operator Not hot at Vasquez/sierra driver moved up at stop RRB.
7/20	5:33 AM	567		757 - Inbound	Timepoint - late departure	8	Lankershim Blvd & Chandler Blvd	☐	
7/20	5:56 AM	507		796 - Outbound	Very late departure	21	Commuter Wy & Soledad Canyon Rd	☐	Operator down departing sc metro do to a coach exchange in the yard RRB.
					Timepoint - very late departure	21	Cinema Dr & Academy Pl		
					Timepoint - very late departure	22	McBean MRTC Park & Ride		
					Timepoint - very late departure	23	Lyons Ave & Valley St		
					Timepoint - very late departure	22	Railroad Ave & Market St		
					Timepoint - very late departure	21	Newhall Ave & Sierra Hwy		
7/20	5:56 AM	516	523291	797 - Outbound	Timepoint - late departure	7	Newhall Ave & Sierra Hwy	☐	
7/20	6:00 AM	237		5 - Outbound	Early departure	-2	Railroad Ave & Market St	☐	
					Timepoint - early departure	-1	Soledad Canyon Rd & Whites Cyn		
7/20	6:01 AM	530		799 - Outbound	Missed trip			☐	
7/20	6:07 AM	948	522764	12 - Inbound	Timepoint - late departure	6	Newhall Ave & Sierra Hwy	☐	
7/20	6:10 AM	984	521613	12 - Outbound	Late departure	6	McBean MRTC	☐	
7/20	6:23 AM	443	523290	502 - Inbound	Timepoint - early departure	-1	Commerce Center Dr & Harrison Pky	☐	
7/20	6:29 AM	24	521397	7 - Outbound	Timepoint - late departure	6	Newhall Ranch Rd	☐	
7/20	6:31 AM	238	521399	5 - Outbound	Timepoint - late departure	6	COC Canyon Country Campus	☐	
7/20	6:31 AM	532		799 - Outbound	Missed trip			☐	
7/20	6:32 AM	569	522191	757 - Inbound	Timepoint - late departure	7	Lankershim Blvd & Chandler Blvd	☐	
7/20	6:41 AM	544	521604	797 - Outbound	Late departure	6	Commuter Wy & Soledad Canyon Rd	☐	Operator down 5 min at sc metro do to maintenance in the yard RRB
					Timepoint - late departure	7	Cinema Dr & Academy Pl		
					Timepoint - late departure	7	Lyons Ave & Valley St		

The exception report is generated from the SQL data held and pre-formatted in an OLAP cube. Transit Managers may have different requirements, and reports can be edited in real-time by applying different filters to the available data.

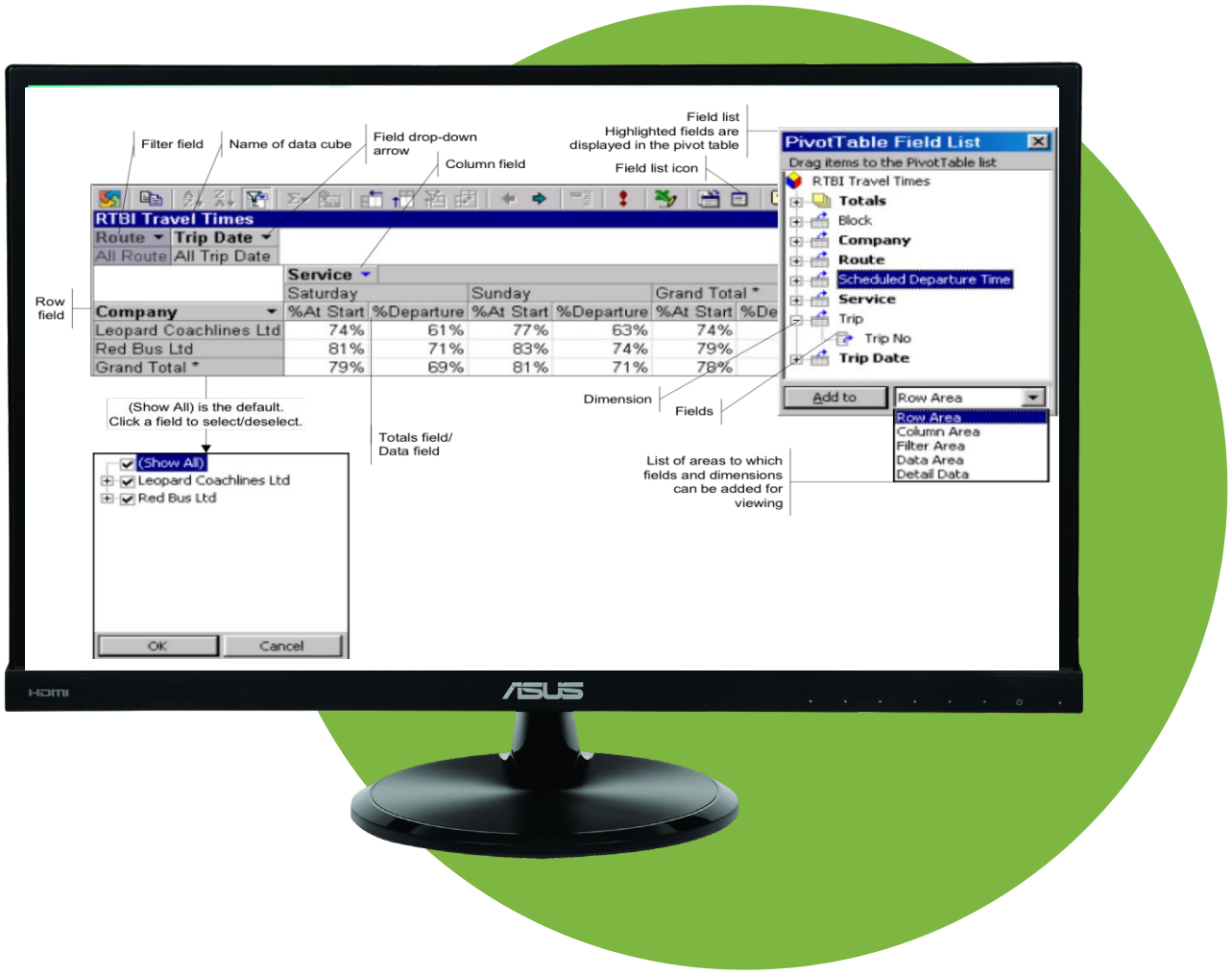
Reporting Pivot Tables

A pivot table is an interactive table used to analyze data from within a web browser. Data can be moved around within the screen (pivoting it) so users can easily change

the way data is displayed, look for specific information or details, and create reports.

"Cubes" are designed to provide information about bus travel times, including aggregate functionality (average, minimum, maximum, and percentage).

Travel times can be viewed for all companies/operators, routes, services, and trips, and combination of total values.

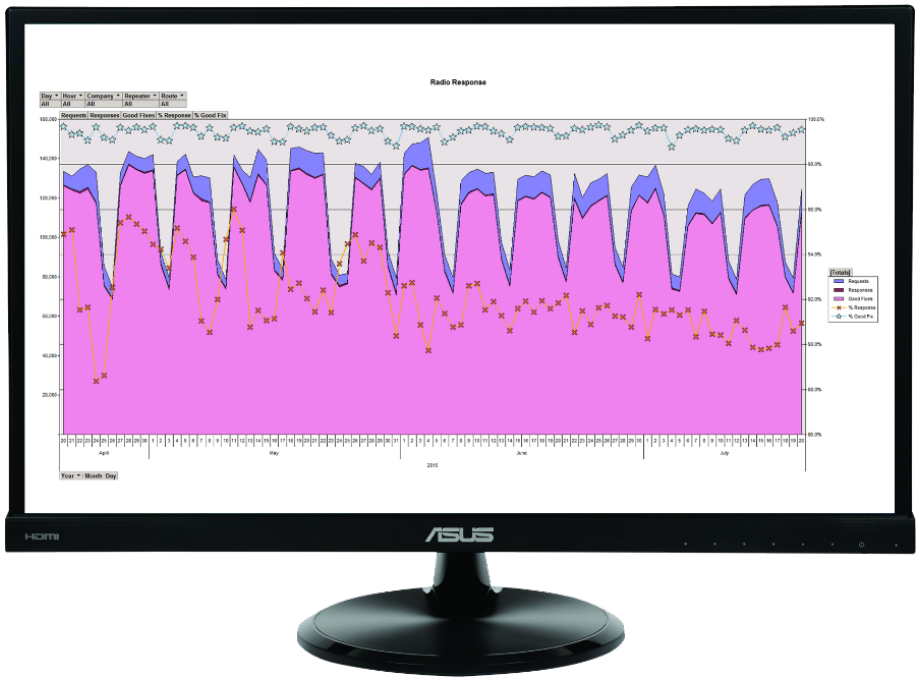


The Notes column to the right of the screen displays any information the Dispatcher has input for a trip, such as a breakdown or a driver no-show. The Dispatch interface and management can accept or decline the reason if penalties might be applicable to the driver or fleet operations contractor.

Standard Report Examples

Our support and maintenance staff have access to many agency operational reports. Connexionz can continuously monitor these on request to identify any potential system operational issue and proactively address issues before you even notice.

In the example below, our staff monitors the communications links between the central system and your mobile fleet. For our purposes, we would expect the percentage of responses to average better than 90%, and the percentage of fixes to follow almost exactly the radio response lines.



Communication Performance
When reviewing travel times, history tells us that this a result of the school holidays and light traffic conditions typical during January.

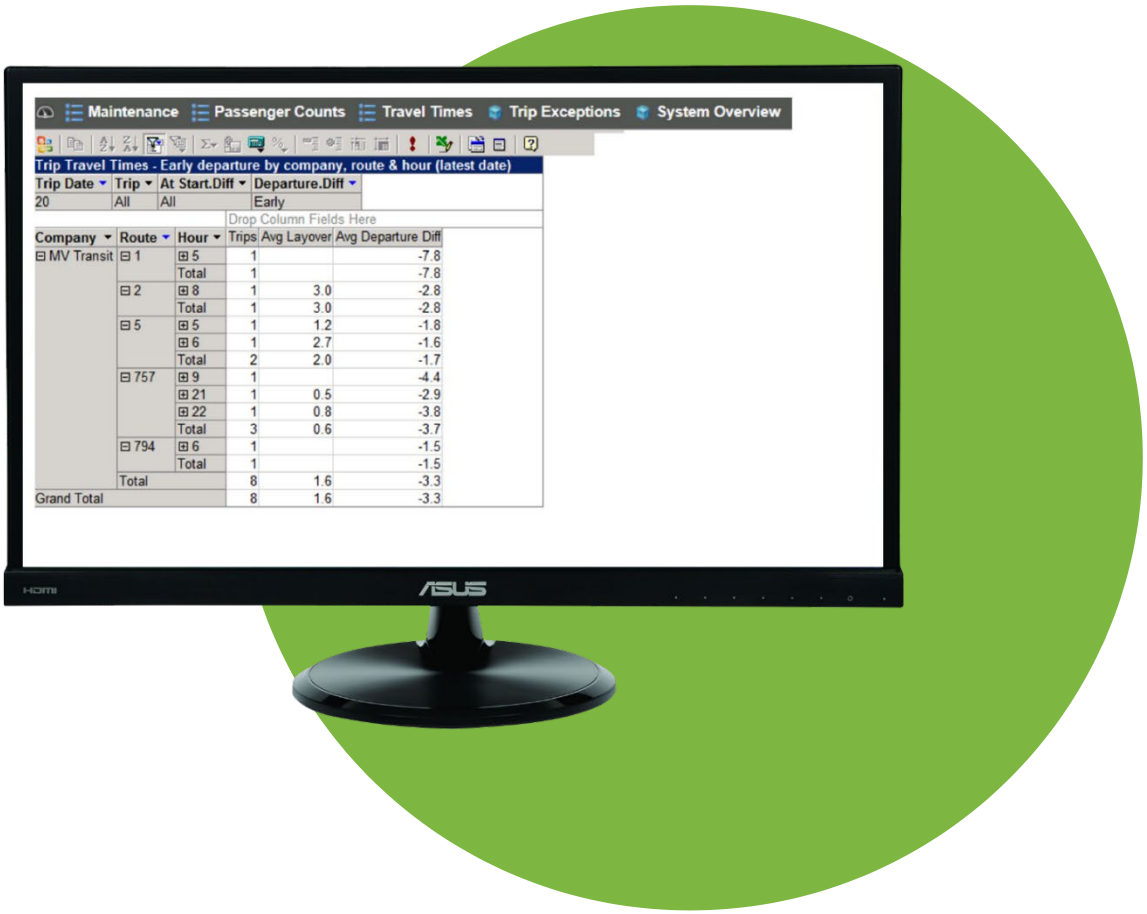
Travel Times by Day

The pivot table view below shows a *CNX Analysis* report by hour of average layover and differential. Our Customers have used our reports to create crucial service changes.

Important deadhead, mileage, and trip data is included and will help populate your NTD reports as requested.

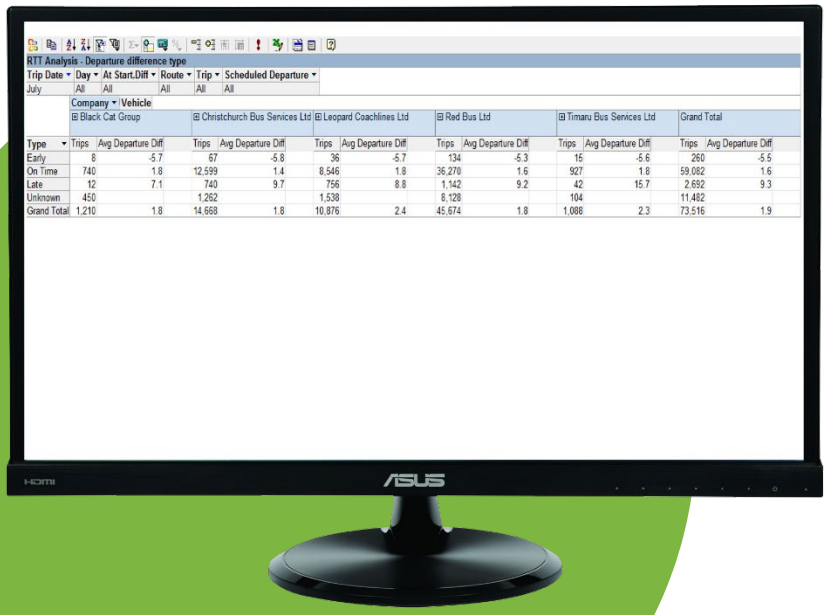
In the table below, we look at the performance of each of the different contractors providing services to one of our Customers ECAN.

This report for July 2009 provides details of the early, on-time, and late trip departures compared to schedule.



The definitions are configurable, and in this case:

- Early = actual departure more than five minutes ahead of schedule
- On-Time = actual departure less than five minutes ahead and less than five minutes behind schedule
- Late = actual departure more than five minutes behind schedule
- Unknown = the trip was not operated; the trip was reset because of a problem, or the vehicle was not detected departing the 'RYDE' Point



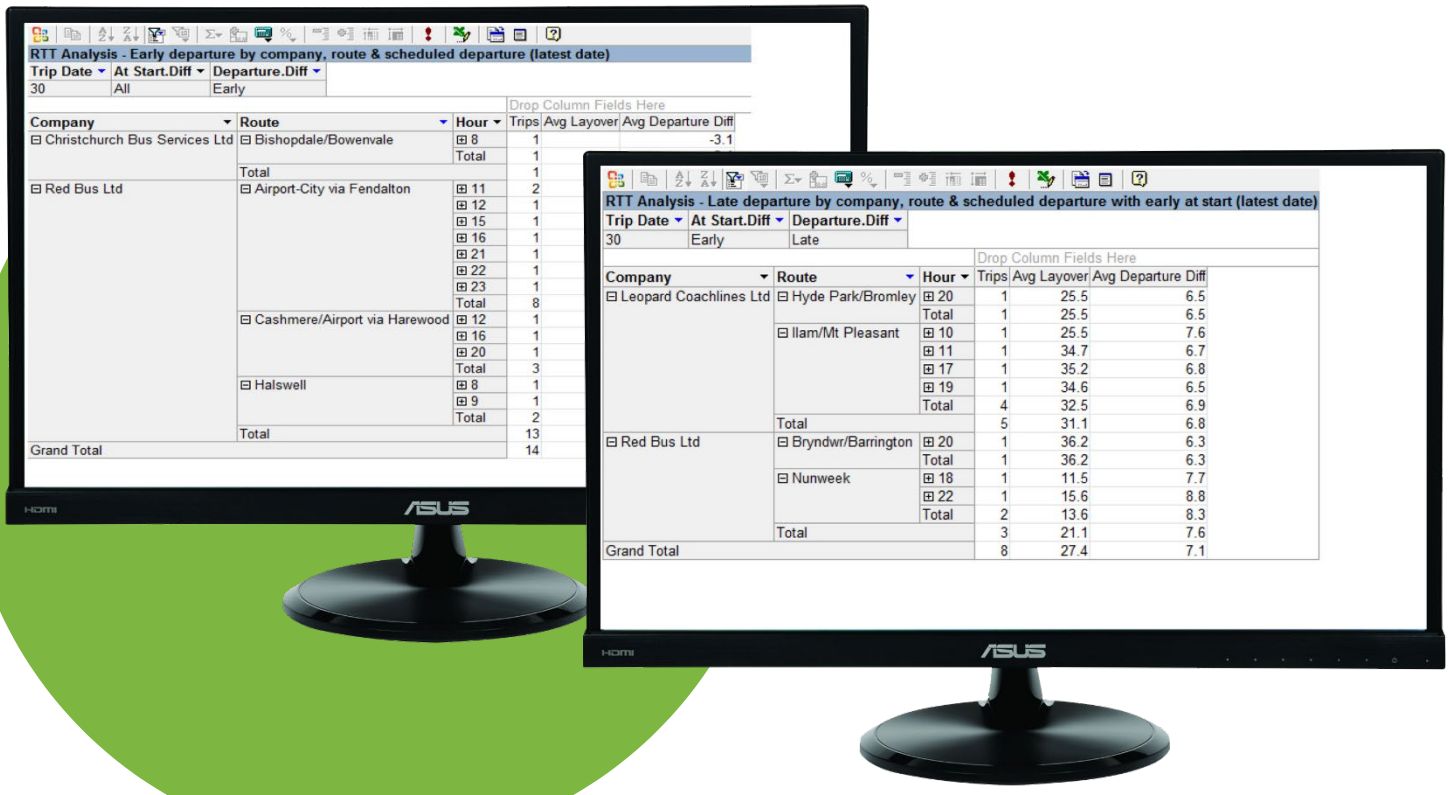
RTT Analysis - Departure difference type

Trip Date	Day	At Start.Diff	Route	Trip	Scheduled Departure
July	All	All	All	All	All

Company / Vehicle	Black Cat Group		Christchurch Bus Services Ltd		Leopard Coachlines Ltd		Red Bus Ltd		Timaru Bus Services Ltd		Grand Total	
Type	Trips	Avg Departure Diff	Trips	Avg Departure Diff	Trips	Avg Departure Diff	Trips	Avg Departure Diff	Trips	Avg Departure Diff	Trips	Avg Departure Diff
Early	8	-5.7	67	-5.8	36	-5.7	134	-5.3	15	-5.6	260	-5.5
On Time	740	1.8	12,599	1.4	8,546	1.8	36,270	1.6	927	1.8	59,082	1.6
Late	12	7.1	740	9.7	756	8.8	1,142	9.2	42	15.7	2,692	9.3
Unknown	450		1,262		1,538		8,128		104		11,482	
Grand Total	1,210	1.8	14,668	1.8	10,876	2.4	45,674	1.8	1,088	2.3	73,516	1.9

Departure differences by month and by operator

The analysis system provides a daily summary for the system administrator to demonstrate early and late departures.



RTT Analysis - Early departure by company, route & scheduled departure (latest date)

Trip Date	At Start.Diff	Departure.Diff
30	All	Early

Drop Column Fields Here

Company	Route	Hour	Trips	Avg Layover	Avg Departure Diff
Christchurch Bus Services Ltd	Bishopdale/Bowenvale	8	1		-3.1
		Total	1		
	Total		1		
Red Bus Ltd	Airport-City via Fendalton	11	2		
		12	1		
		15	1		
		16	1		
		21	1		
		22	1		
		23	1		
		Total	8		
	Cashmere/Airport via Harewood	12	1		
		16	1		
		20	1		
		Total	3		
	Halswell	8	1		
		9	1		
		Total	2		
	Total		13		
Grand Total			14		

RTT Analysis - Late departure by company, route & scheduled departure with early at start (latest date)

Trip Date	At Start.Diff	Departure.Diff
30	Early	Late

Drop Column Fields Here

Company	Route	Hour	Trips	Avg Layover	Avg Departure Diff
Leopard Coachlines Ltd	Hyde Park/Bromley	20	1	25.5	6.5
		Total	1	25.5	6.5
	Ilam/Mt Pleasant	10	1	25.5	7.6
		11	1	34.7	6.7
		17	1	35.2	6.8
		19	1	34.6	6.5
		Total	4	32.5	6.9
	Total		5	31.1	6.8
Red Bus Ltd	Bryndwr/Barrington	20	1	36.2	6.3
		Total	1	36.2	6.3
	Nunweek	18	1	11.5	7.7
		22	1	15.6	8.8
		Total	2	13.6	8.3
	Total		3	21.1	7.6
Grand Total			8	27.4	7.1

CNX Analysis provides customers with the means to manipulate data collected during the operations of the passenger transport system.

Transport planning staff have data available to refine or enhance the route and schedule- building processes. Data can be exported into third-party applications and services, *CNX Analysis* allows for the download of the NTD form.

Many 'out of the box' reports are available within *CNX TransitManager* and since your data is exportable into MS Excel pivot tables, it is easy to create any report that you wish.

The following are examples of the primary 'cubes' by dimensions and measures.

'Cubes' are available to users depending on their user permissions. Manipulation of the cubes and data matrices can be configured as required to generate user-defined reports.

CONNEXIONZ SAMPLE - REPORT TYPES	
1. Device Status	8. System Overview
2. GPS Response	9. Vehicle Reliability
3. Pinger Activation	10. Platform APC
4. Radio / Cell Response	11. Time-point APC
5. Time-point Travel	12. Trip ARC
6. Trip Travel Times	13. Cell Calls
7. Trip Exceptions	

CONNECIONZ SAMPLE - REPORT DIMENION TYPES			
At Start Difference	(All), Type	Origin Time-point	(All), Time-point
Activator	(All), Activator	Platform	(All), Platform
Block	(All), Block Number	Platform Sequence	(All), Platform No
Company	(All), Company, Vehicle	Route	(All), Route, Direction, Pattern
Day	(All), Day	Scheduled Departure	(All), Hour, Minute
Departure Difference	(All), Type	Time-point Sequence	(All), Time-point No.
Destination Time-point	(All), Time-point	Travel Time	(All), Travel Time
Device	(All), Type, Device	Trip	(All), Trip No.
Hour	(All), Hour	Trip Date	(All), Year, Month, Day
Notes	(All), Notes		

CONNEXIONZ SAMPLE - REPORT DIMENION TYPES			
Accepted	Trips where the regulator accepted a trip exception.	**Scheduled Activations**	Number of RFID activations that were scheduled to take place.
Actual Activations	Number of RFID activations.	**Time-points**	Number of time-points.
Alightings	Number of passengers getting off a vehicle.	**TP Early Departure**	Time-points where the vehicle was detected departing early.
Assigned	Number of trips assigned to vehicles.	**TP Late Departure**	Time-points where the vehicle was detected departing late.
Bike Rack	Number of bike rack deployments.	**TP Very Late Departure**	Time-points where the vehicle was detected departing very late.
Boardings	Number of passengers getting on a vehicle.	**Trips**	Number of trips.
Calls Made	Number of cellular calls made.	**Unassigned**	Number of trips not assigned to a vehicle.
Calls Received	Number of cellular calls received.	**Vehicles**	Number of vehicles assigned to trips.
Early Departure	Trips where the vehicle was detected departing early.	**Very Late Departure**	Trips where the vehicle was detected departing very late.
Errors	Number of Errors.	**Warnings**	Number of Warnings.
Fixes	Number of fixes received.	**Wheelchair**	Number of wheelchair deployments.
Good Fixes	Number of good fixes received.	**Avg Actual Travel**	Average number of minutes for a vehicle to travel from the origin to destination time-point.
Late Assignment	Trips where the last vehicle assignment was made after the scheduled start of the trip	**Avg Arrival Difference**	Average number of minutes difference between scheduled arrival and actual arrival at the destination time-point.
Late Departure	Trips where the vehicle was detected departing late.	**Avg Boardings**	Average number of boarding on a trip segment.
Max Boardings	Maximum passenger loading on a trip segment.	**Avg Departure Difference**	Average number of minutes difference between scheduled departure and actual departure at the origin time-point.
Max Loadings	Maximum passenger loading on a trip segment.	**Avg Loading**	Average passenger loading on a trip segment.
Max Requests	Maximum number of radio requests made per minute per vehicle.	**Avg Layover**	Average number of minutes at the origin time-point.
Missed Trips	Where the vehicle assigned was not detected at any time-point.	**Avg Passenger Distance**	Average number of miles travelled by a passenger from the origin to destination time-point.
No Assignment	Trips where there was no vehicle assignment, or the trip was unassigned.	**Avg Requests**	Average number of radio requests made per minute per vehicle.
Passenger Distance	Number of miles travelled by passengers from each origin to destination time-point.	**Avg Revenue Distance**	Average number of miles from the origin to destination time-point.
Requests	Number of requests made.	**Avg Scheduled Travel**	Average number of scheduled minutes for a vehicle to travel from the origin to destination time-point.
Responses	Number of Responses received.	**Avg Speed**	Average mph for a vehicle to travel from the origin to destination time-point.
Revenue Distance	Number of miles from each origin to destination time-point.	**Avg Travel Distance**	Average number of minutes difference between actual and scheduled travel time.

CONNEXIONZ SAMPLE - REPORT DIMENION TYPES			
% 1 ppm	Percentage of tracking vehicles that responded on average at least 1 position per minute.	**% Fix**	Number of fixes divided by number of requests.
% 2 ppm	Percentage of tracking vehicles that responded on average at least 2 positions per minute.	**% Good Fix**	Number of good fixes divided by number of requests.
% Accepted	Percentage of trips where the regulator accepted a trip exception.	**% Late Assignment**	Percentage of trips where the last vehicle assignment was made after the scheduled start of the trip.
% Activation	Number of activations divided by number of scheduled activations.	**% Late Departure**	Percentage of trips where the vehicle was detected departing late.
% Active	Percentage of assigned trips that achieved an “on route” state.	**% Missed**	Percentage of trips where the vehicle assigned was not detected at any time-point.
% All TP Early Departure	Percentage of time-points where the vehicle was detected departing early.	**% No Assignment**	Percentage of trips where there was no vehicle assignment, or the trip was unassigned
% All TP Late Departure	Percentage of time-points where the vehicle was detected departing late.	**% On Route**	Percentage of trips where the vehicle was not detected off route.
% All TP Very Late Departure	Percentage of time-points where the vehicle was detected departing very late.	**% Received**	Number of calls received divided by number of calls made.
% APC	Percentage of assigned vehicles that reported automatic passenger count data.	**% Response**	Number of responses divided by number of requests.
% Arrival	Percentage of trip segments where the vehicle was detected arriving at the destination time-point.	**% TP Early Departure**	Percentage of trips where the vehicle was detected departing early from a time-point.
% Assigned	Percentage of trips assigned to vehicles	**% TP Late Departure**	Percentage of trips where the vehicle was detected departing late from a time-point.
% Assigned on Time	Percentage of assigned trips that were not late assignments.	**% TP Very Late Departure**	Percentage of trips where the vehicle was detected departing very late from a time-point.
% At Start	Percentage of trip segments where the vehicle was detected arriving at the origin time-point.	**% Tracking**	Percentage of assigned vehicles that responded with a position.
% Delta	Percent increase from the lesser of boardings & alightings to the greater.	**% Travel**	Percentage of revenue distance that the average passenger travelled.
% Departure	Percentage of trip segments where the vehicle was detected departing from the origin time-point.	**% Travel Time**	Percentage of trip segments where the vehicle was detected departing from the origin time-point and arriving at the destination time-point.
% Detected	Percentage of trips where the vehicle was continually detected.	**% Very Late Departure**	Percentage of trips where the vehicle was detected departing very late.
% Early Depart.	Percentage of trips where the vehicle was detected departing early.	**Deadhead Distance**	Bus mileage where a bus wasn’t running scheduled, planned, or sudden services

REAL-TIME PASSENGER INFORMATION NETWORK

We share the stated objective of all public transit agencies: to remove the uncertainty of travel. Not having reliable access to accurate schedule information is the main reason people stop using public transport. We see the public readily switch to agencies that no longer publish traditional bus schedules but share information based on our highly accurate, real-time prediction algorithms. Why? Because it simply tells them when their bus will arrive. Your agency benefits, and complaints about arrivals decrease when riders are given access to the accurate information, they want most.

CNX TransitManager publishes all your public service information (including arrival predictions, service alerts, route and stop data, Google General Transit Feed Specification (GTFS) in real-time) to your system's public interface in a standardized (e.g..., KML, XML, JSP, JSON queries) open- data stream. Our web services can be called upon up to every second.

On the next page we've listed out our currently available APIs and feeds but also included feeds and data sets that we are willing to open up, should the City of Racine require their use.

We don't charge you for publishing service data generated by your ITS system. No increasing software fees! Our public interfaces comply with the philosophy of APTA's RIITS interoperability program to enable regional transit agencies to share their real-time service information with neighboring agencies. Connexionz is one of a few companies that actively support APTA's drive to open the historically proprietary data generated by most of ITS supplier systems in the nation.

Support for Google's GTFS and real-time services have always been standard features of *CNX TransitManager*.

On-street signs, websites, and other public information platforms will access your real-time service information through the described public interface.

Connexionz Open Feeds and Data Exchange

Since 1996, Connexionz remains steadfast focusing on sharing data with 3rd parties.

Each project Connexionz has deployed has required some level of data exchange. Connexionz data is available through web API microservices that can retrieve almost any available data set in the *CNX TransitManager* software. Connexionz has remained on the forefront of GTFS, including being one of the only vendors who has been sharing GTFS from its' inception and consistently managing change as it evolves. The commitment we have to this project is no different.

Our APIs and feeds are well documented; and invite a discussion about how they are best used during the initial discovery phase of the project to address any additional feed requirements. Below, are some of the current feeds Connexionz use and other available datasets we can open up as needed.

We would invite a technical discussion with you and your consultants about how we best exchange this data.

Available feeds:

GTFS:

Static – Info, routes, schedules, colors, fare zones, route names- short/long
Real-time - Trip Updates, Service Alerts and Vehicle Positions,

Other available feeds:

Journey Planner Schema, Service Calendar, Service Alerts, Platform ID arrival retrieval, Schedule, Route Position, Stop locations.

Other available data sets (through web API):

Real-time load, vehicle capacity, OTP by route, driver, stop, and trip; Run times by route, by trip, or all routes; GPS Playback; Average speed by driver, trip, or route; Early departures for today; Layover summary.

A comparison of arrival prediction systems between companies:

Arrival prediction systems use either a 'deviation from schedule' system or, a pure 'real-time and historical data' methodology for generating real-time predictions (called Linear Regression). Some manufacturers incorrectly claim to offer 'the best of both.'

'Deviation from schedule' systems originated in Europe in the late 1980s but are now largely obsolete there. About half-a-dozen suppliers of ITS solutions in North America make arrival predictions with a deviation- based model or claim to use a combination of 'deviation and historical data'.

A 'deviation from schedule' system generally refers to any ITS system where the bus reports that it is ahead or behind schedule and it requires the schedule to be stored on-board each bus. Deviation systems are notoriously unreliable. If a vehicle's location 'ping' fails to arrive at the central system (a regular occurrence without any error checking on these systems, due to constraints in data packet transmission size) it is believed the bus is on schedule. Consequently, incorrect arrival information is sent to passengers at the bus stop, or through smartphone applications or web site. This might result in estimated arrival times 'bouncing' up and down and is not the type of ITS system that will install confidence in your passengers.

Real-time and Historical Data' Methodology

Such is the accuracy of 'real-time and historical data' systems that they are mandated as 'the ETA calculation standard' by national transit agencies throughout Europe and Asia.

Some ITS companies claim that they have a system that combines deviation-based systems with real-time or historical data, which is often a play on words.

Connexionz uses this superior linear regression (real-time and historical travel time) set of arrival prediction algorithms that is among the most accurate, if not the most accurate, globally. That knowledge is backed by our customers, after comparing our system to our competitors'.

Backed by an independent case study performed in 2014 at a Connexionz supported agency in California.

Connexionz algorithms were developed more than 20 years ago. Our prediction suite has been accumulating knowledge and evolving for much longer than that of any of our competitors.

Our prediction algorithm continuously 'learns' the nuances of an agency's operations. Riders can confidently rely on the highly accurate arrival predictions our system generates and publishes.

The estimated travel time is calculated by route segment, trip number, and the mean time of day. Predictions are based on current bus location, calculated, and made available for every bus stop in the system. As vehicle updates come in, the prediction is recalculated, and new arrival times distributed. Predictions are based on historical data of travel times for that trip number, and the system can check these predictions at random and report on them.

Actual travel times are downloaded daily to refresh the calculation of the arrival prediction algorithm for a trip number, ensuring the calculations are based on the most recent historical data.

Arrival Time Prediction

Range of actual arrival time from prediction	Frequency with which actual arrival falls within the predicted range
+ 1.5 minutes – 1 minute	95% of the time when estimated arrival time is <2 minutes
+ 2.0 minutes – 1 minute	95% of the time when estimated arrival time is < 5 minutes
+3.0 minutes – 1 minute	95% of the time when estimated arrival time is < 15 minutes

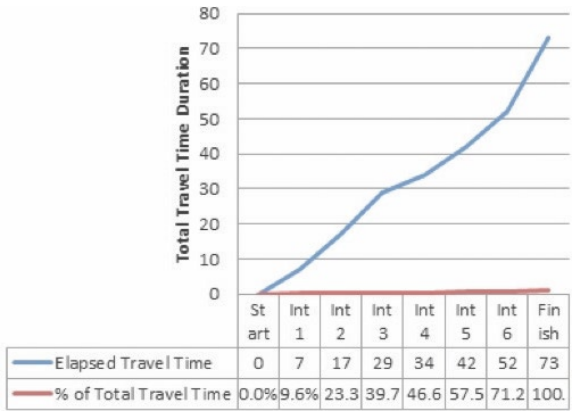
The accuracy of arrival time prediction is guaranteed where normal traffic conditions apply. Connexionz defines traffic conditions as normal when the travel times between two timing points at the same time and day varies by less than 5%.

CNX TransitManager continuously generates high accurate arrival predictions for EVERY bus stop.

Real-Time Arrival Predictions

CNX TransitManager uses a linear regression model as the foundation for predicting real- time arrival at stops. Together with recorded data collected for each trip, the actual trip travel times are aggregated and averaged to construct a system 'trip profile'. Feel free to request more information on how our time-points are calculated.

Line 14 Trip 12345 ETD 0914



	Start	Int 1	Int 2	Int 3	Int 4	Int 5	Int 6	Finish
Elapsed Travel Time	0	7	17	29	34	42	52	73
% of Total Travel Time	0.0%	9.6%	23.3	39.7	46.6	57.5	71.2	100.

screenshot of report plotted the travel time

The Connexionz solution calculates each bus stop along the route as a percentage of aggregated average Trip Travel Time.

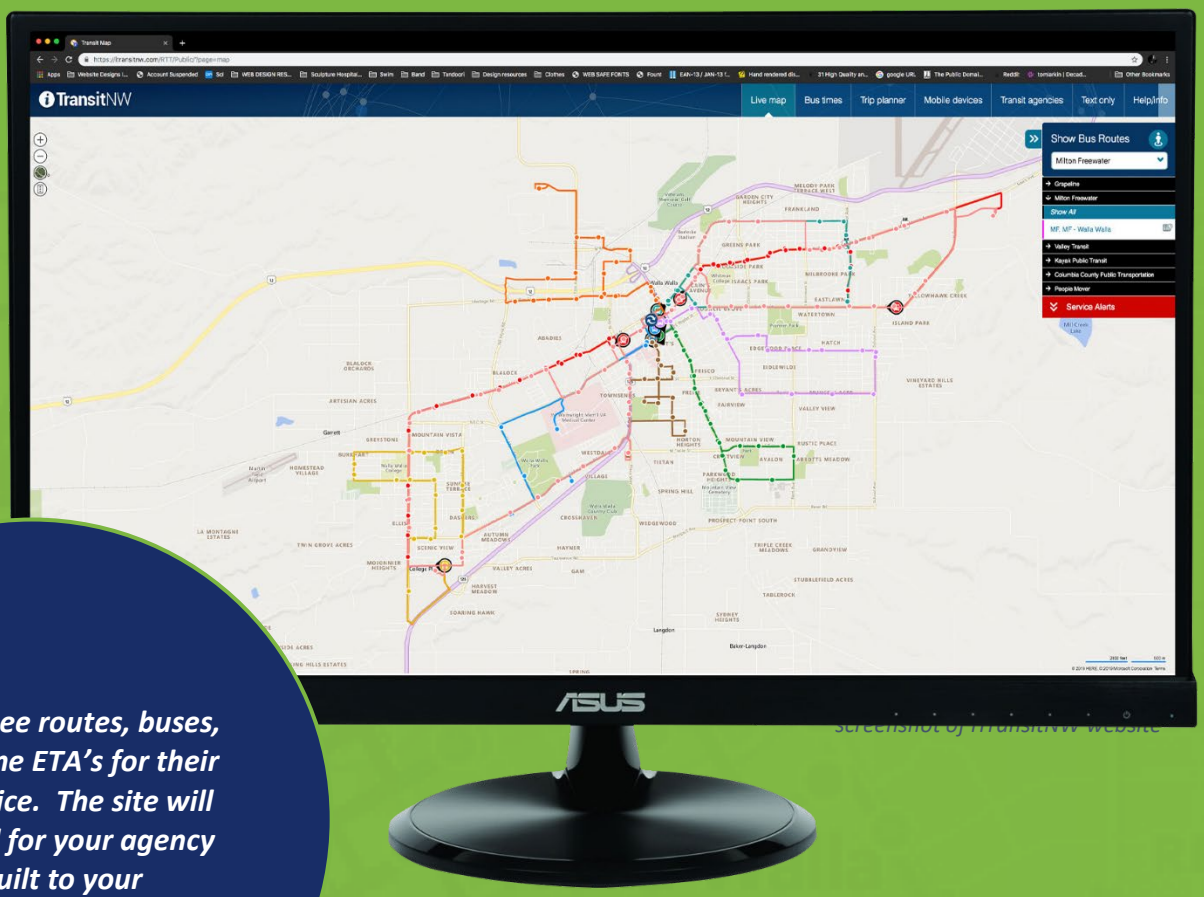
Webpage And Portal Information

CNX WebPortal provides a public website, designed for optimal display on smart phones, tablets, phones, or PC's, as part of this proposal.

The web page is customized with your branding and has options for trip planning, moving map, Bus Stop ID Query, and subscriptions and alerts for registered riders. Refer to one of our Customers – Kings County Area Transit for a live example - https://kart.connexionz.net/rtt/public/

We will also push your real-time and schedule data to Google Transit a SMS call/response style service.

The data can be shared with any additional partners for public consumption through API's and open sources.



Riders can see routes, buses, and real-time ETA's for their stop of choice. The site will be branded for your agency and built to your specification.

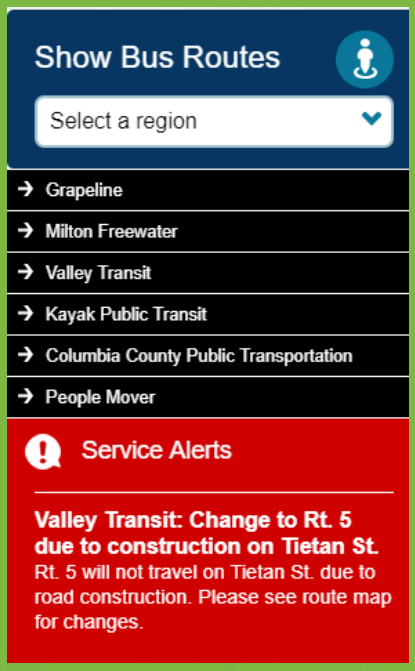
Service Alerts And Operator Messages

Message data such as service alerts and announcements are transferred directly to your public websites, displays, and smartphone applications.

A catalogue of canned messages can be managed by a dispatch operator and transmitted by HTML or XML to a third-party system over a fixed or wireless network. This service alert feed also carries over to your signage network and GTFS.

Users can create custom alerts which they receive by email for buses that are on the way to their stop. These alerts can be set with specificity to route, direction/destination, day, and time.

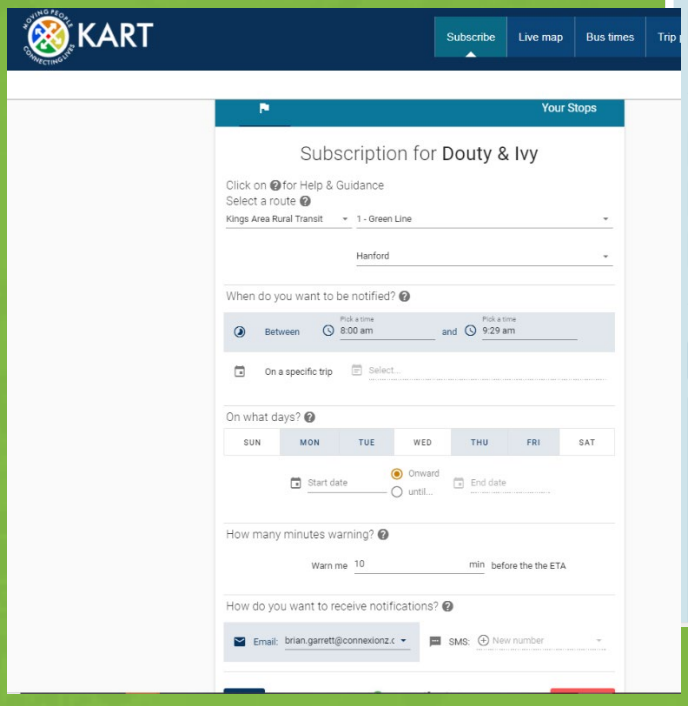
The requirement for user registration opens marketing channels for The City of Racine to contact your riders by opting them in for email communication as they create an account for your portal.



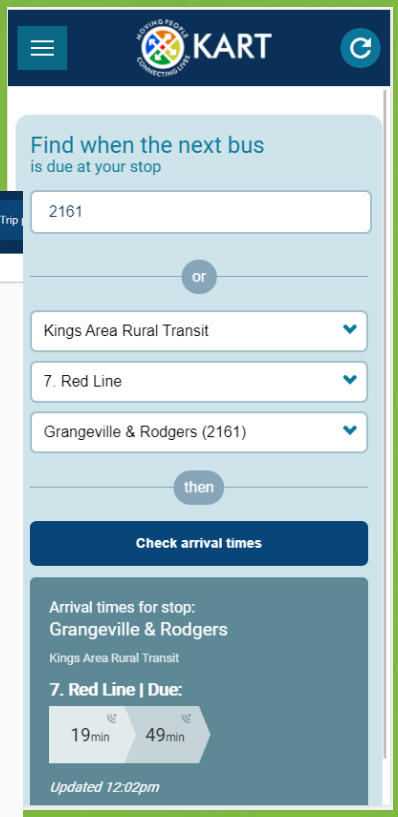
Subscriptions and Alerts

One important feature of the *CNX WebPortal* is the ability for a user to query information based on stop ID. This allows users to easily get ETA information quickly. The pages for each Stop ID can also be used as landings for QR code scans.

If you use the SMS program, your riders can also manage their stop level subscriptions and alert notifications using their unique on-line login.



Screenshot - creation of subscription via website



screenshot - of cell phone bus stop information

Connexionz offers the most thorough passenger public portal in US public transit.

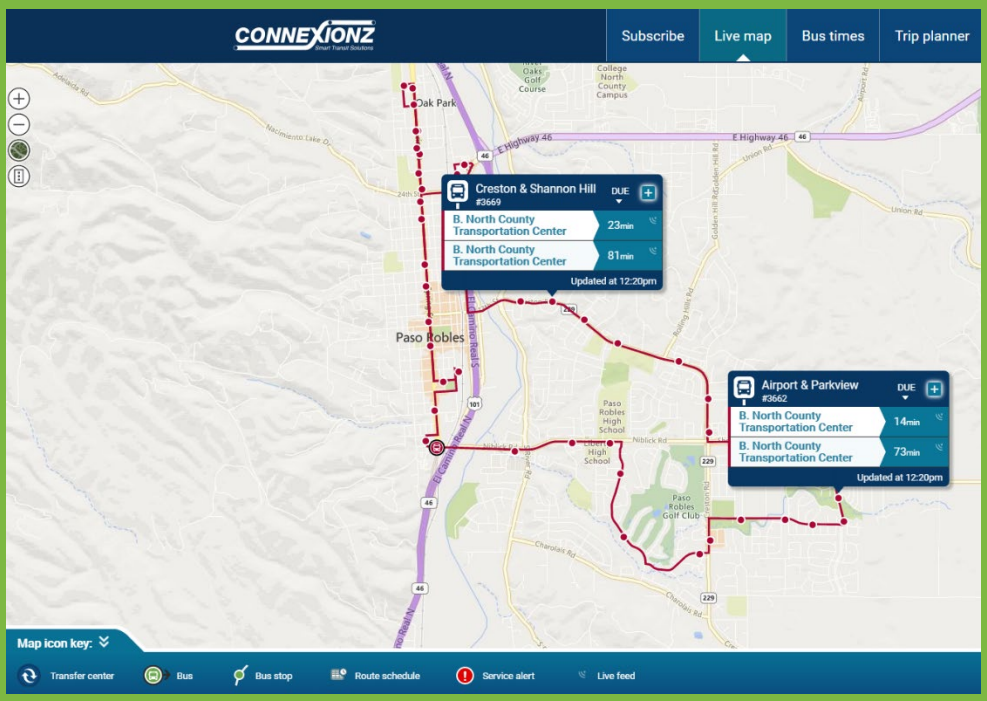


Figure 1 - screenshot of live map, utilising a route, click on bus stop location to show ETA's

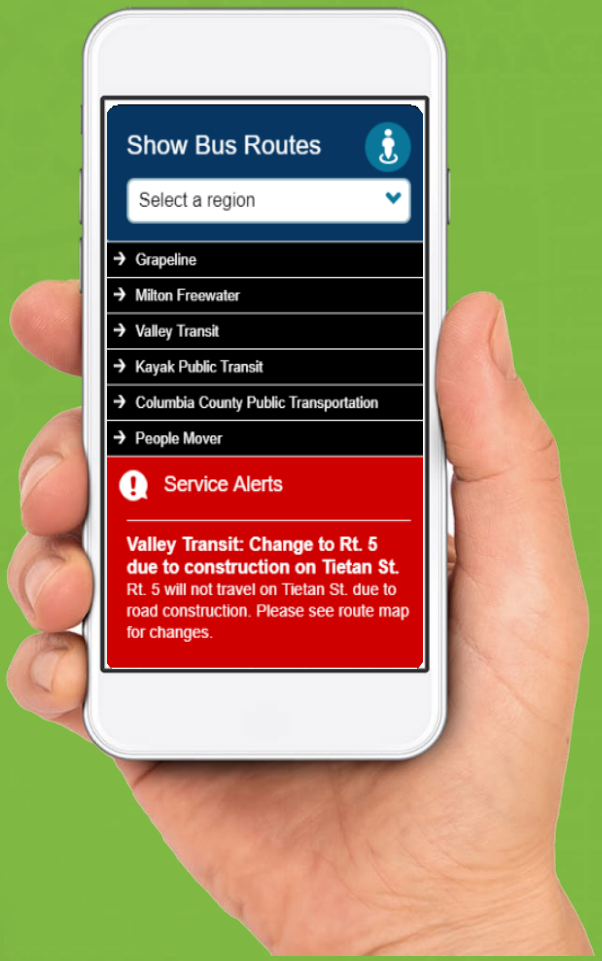
CNX Mobile Apps

CNX Mobile Apps will carry your branding while app users enjoy access to the transit industry's most accurate RTPI. Engage with the community more effectively while boosting ridership with a more positive rider experience.

- White label approach means each app has Racine Transit's desired look and feel and function.
- Designed for ease use in both iOS and Android.
- Serve up the most accurate RTPI while reducing customer service call.
- Send public information, alerts, and bulletins system-wide or on a route and stop level.

This optional application will be downloadable from the app store as 'Racine Transit' or similar.

The functionality of the app directly mimics the functionality of the website, creating a familiar and comfortable experience for your ridership.



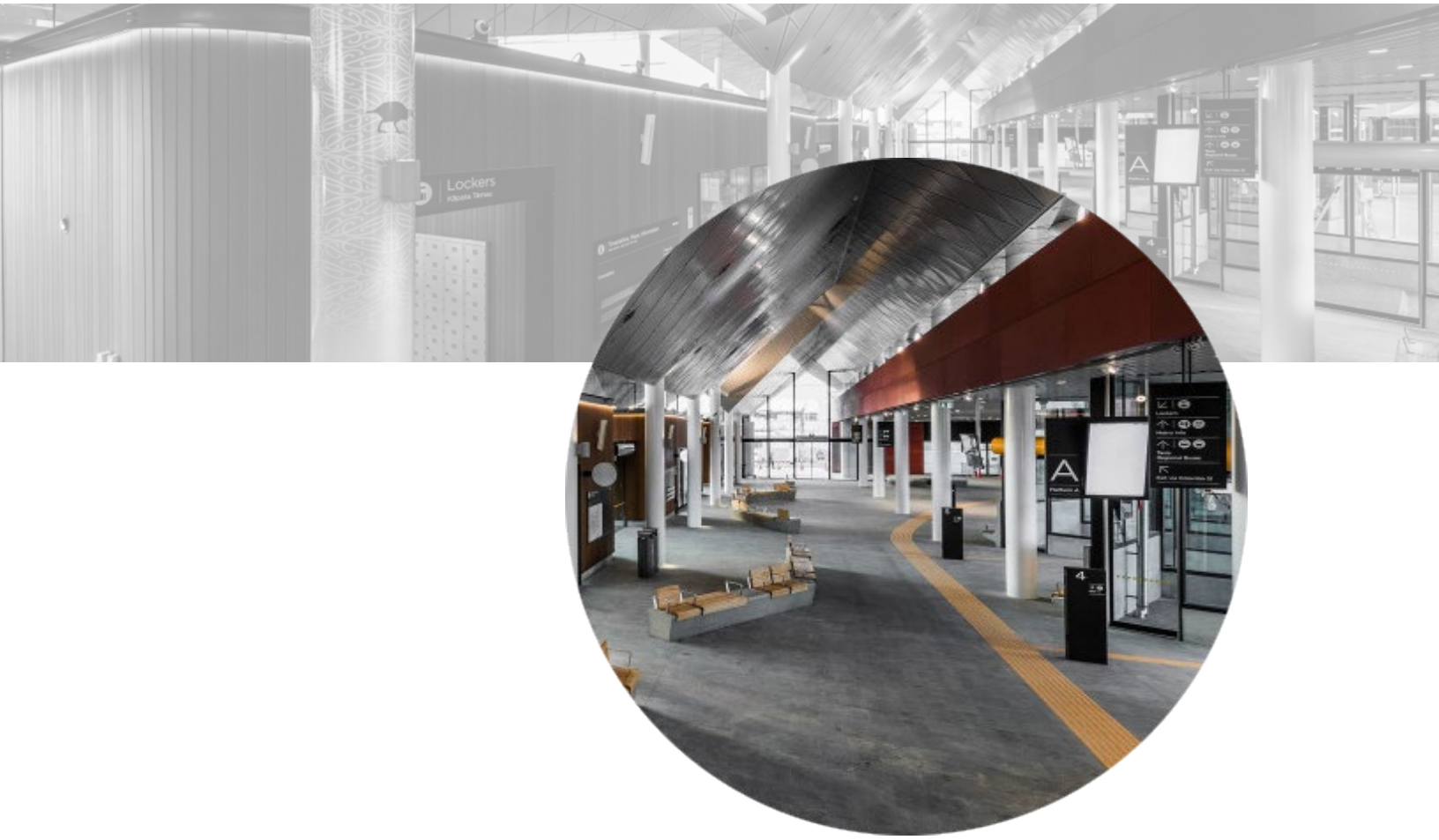
Real-Time Portal Go-To-Market Support

To help support the roll out of your fixed route public website and applications, Connexionz provides a turnkey "go-to-market" support including helpful digital and printable advertising material for your ridership to learn how to best use the solution. Great exposure across local and industry news sources, to ensure the City of Racine riders are aware of the new system.

Connexionz Display Options

Connexionz has supplied and installed more than 2,500 external LED and LCD displays as an additional integrated component to the system. Communication with these displays is through Ethernet or a wireless service such as cellular, wi-fi or private radio.

We've presented options in the pricing for a variety of LED Displays. Plus, options for 32" and 55" LCD signage, indoor and outdoor options. A simple arrival screen is included with CNX system with no additional license costs. For those screens which may require multimedia-based content we can discuss the addition of CNX CMS software.



LED Displays (Optional)

LED displays have limited functions compared to LCD displays, however, they are ideal for installation at shelters, transit stations and busy locations.

Connexionz can supply mains or solar powered LED displays that mount on poles, affixed to a bus shelter, wall or under-mounted to building soffits.

The pricing we've included is for Sunrise displays which are used by Connexionz globally.

LED specification sheets can be found in the Appendix.

LCD Displays (Optional)

Liquid Crystal Display (LCD) and Thin Film Transistor (TFT LCD) signs use LCD monitors and a set-top box to display information at locations such as transit stations, university common rooms, malls, shopping centers, cafes, and shop windows. These commercial grade displays can be installed in direct sunlight and data delivery is by permanent internet connection, cellular, or private radio. We have included pricing for integrating the existing LCD with vehicle arrival/departure content.

ONBOARD SYSTEMS

CNX Medius

The ***CNX Medius*** is an Enhanced Vehicle Functionality (EVF) unit that supports integration with a wide range of industry-compliant, third-party equipment, including but not limited to:

- Automatic Fare Collection Systems
- Automatic Passenger Counting Systems
- Head signs
- Internal LED 'next stop' displays
- Audio announcement/PA
- Emergency alarm
- Engine monitoring
- Multimedia/LCD displays
- Traffic Signal Priority Systems
- Vehicle Diagnostics
- CCTV
- VoIP Communications
- Wi-fi/high-speed wireless data network

The *Medius* unit comes complete with in-built or externally connected wi-fi and Bluetooth to support all servicing and maintenance. We include in our deployment an external router so that any future connectivity needs can be met my our external

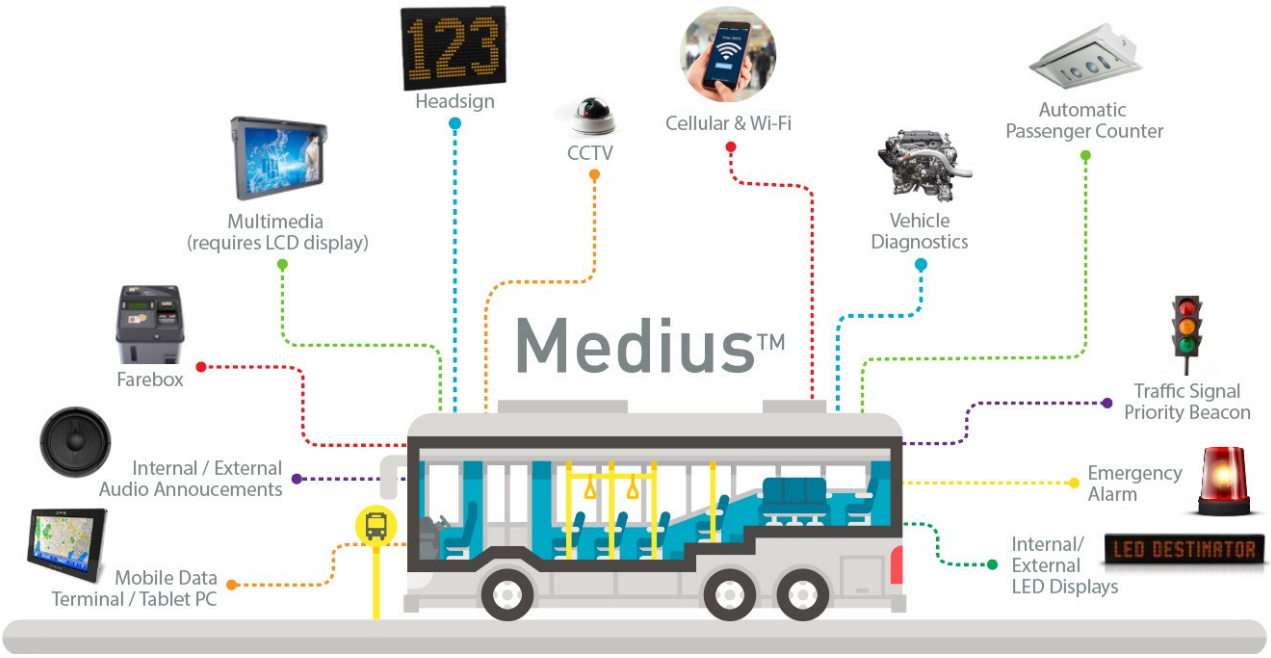
Servicing includes wireless software updates using a laptop, smartphone or tablet and any standard web browser.

The *Medius* is discretely installed in overhead compartments above the driver. In vehicles without this option, Medius can be installed behind the driver's seat within any available space.

The *Medius* will be the sole integration platform for any future needs.

It's important to take note the *Medius* is a separate unit from the tablet! Tablets are exposed to the outside elements, with the Medius tucked away, it remains reliable and undisturbed. If needed, our system can operate at 100% without a tablet.

High level view of available on-board ITS System components



CNX Medius G2's capabilities include:

- Built-in Wi-Fi and Bluetooth to support service and maintenance via wireless software updates
- Multiple connections types:
- SAE J1939
- J1708
- CAN
- SIRI
- Ethernet
- HDMI
- USB
- Cellular connectivity

Can be installed in overhead compartments, behind the driver's seat affixed to a bulkhead, or within an equipment cabinet.

Hardware	CPU Dual Core ARM
Memory	1Gb onboard 64Gb + expansion
Interfaces	Power HDMI (expandable) USB Digigal I/O (expandable) CAN J1939 Audio In/Out Ambient noise detection GPS Ethernet Bluetooth WiFi (passenger and maintenance)

Dimensions	140 x 120 x 55 mm
Weight	710 grams
Environment	Temperature: -40 to +85˚C Humidity: 10-90% non condensing MIL-STD-810 / IED-60068-2-64 (wheeled vehicle vibration & shock)
Electrical	12V or 24V nominal, 10.8V – 26.4V Power max operating: <20W

CNX MDT – Android Tablet

The ***CNX MDT*** is the latest generation of Android tablets designed specifically for Connexionz use. The *CNX MDT* is manufactured for Transit use. It is IP67 rated and designed to connect directly to the ignition, keeping it powered. It's important to understand though that the integration doesn't happen on or at the tablet. Any connectivity issues with the *CNX MDT* won't affect the CAD/AVL system. The back-office software will continue to receive GPS pings and associate them with the intended blocks.

- Driver login and validation
- Route / run paddle information
- Schedule adherence
- Text-based messaging
- Rider counts / APC override
- Incident reporting
- System health & performance

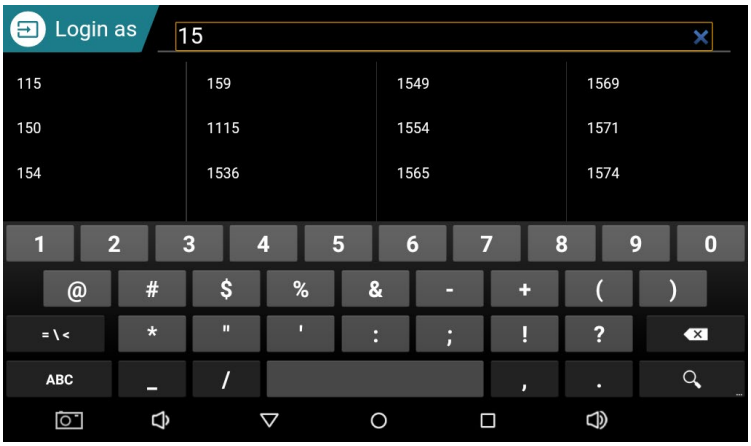
Hardware	Type	Qualcomm MSM8953 Octa-core
	Speed	2.0GHZ
	Type	Adreno 506 1920 x 1200 @ 60fps
	RAM	LPDDR3 4GB
	ROM	Emmc 64GB
	g-sensor	Gravity accelerator sensor
	l-sensor	Ambient light sensor
	m-sensor	Magnetism Sensor (compass)
	Gyro sensor	Virtula Gyro
OS	Version	Android 9.0
IP	Rating	IP67
Display - LCD	Screen size	8" 16:10
	Resolution	1280x800 IPS LCD
	Brightness	700cd/m2
	Touch Panel	above 7H-antiscratch, supports handwriting
Other	Camera	Front 2.0mp, Rear 13MP auto focus with flashlight
	Speaker	Embedded 8/0.8W waterproof speaker *1
	Mic	sensitivity -42db, output resistance 2.2k
	Battery	Built in polymer-li-ion battery, 3.7V/8500mAH
	Endurance	About 10hrs (default 50% volume, default 400lumens brightness, play 1080P HD video)

Mechanical	Dimension	228 * 145 * 16.5 mm 8.97 * 5.70 * 0.65 inches
	Weight	630 grams
	Colour	Black
Data Communication	wifi	802.11 (a/b/g/n) frequency 2.4G+5.8G dual bandi wifi
	bluetooth	BT4.1 (BLE) class 1.5 transmission distance: 10m
	4G LTE	Built in
	GPS	Capture sensitivity -160dBm; cool start time: <30 seconds, Hot starttime: <30 seconds
	NFC	Built in
Interface	External	Extensive external memory supports TF Qty:1 (max 128G)
	Sim card	Sim card slot Qty:1
	USB Interface	Extend external memory and data transfer - Standard USB 3.0 Qty:1 - Type C Qty:1
	Earphone Jack	3.5mm standard earphone jack Qty:1
	HDMI	Video output HDMI 1.4a Type C Qty:1
	Extension Slot	12pin Pogo Pin Qty:1

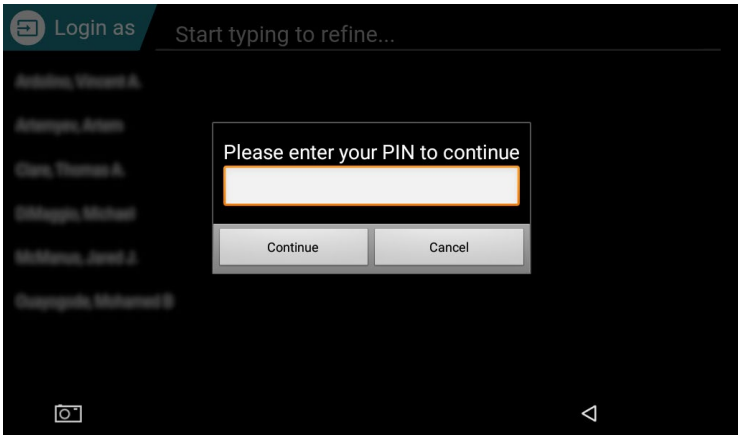
CNX Operator Software

The *CNX MDT* includes software to help with operator-run selection, schedule adherence, headway management, trip map, performance information, driver login, and system health.

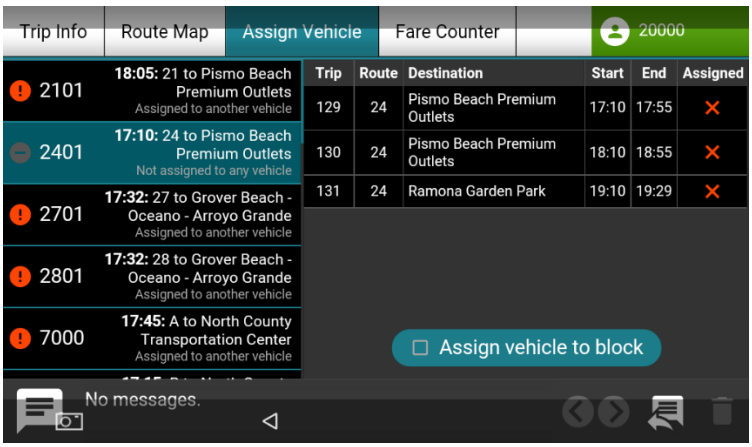
The tools provided on the android tablet will ensure your vehicle operators have the tool kit necessary to perform at their highest level.



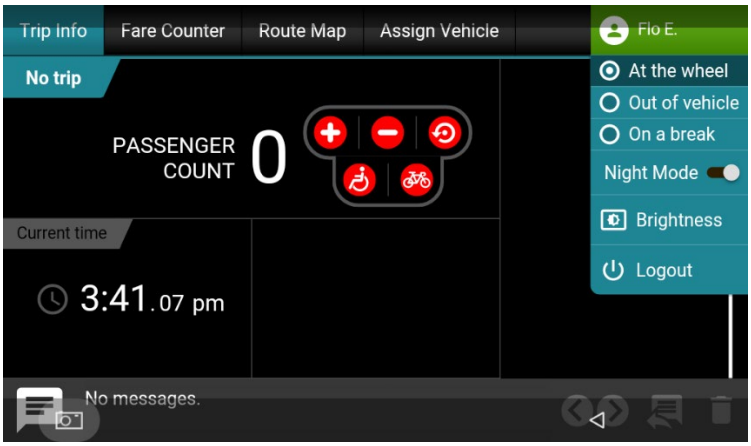
Driver login screen



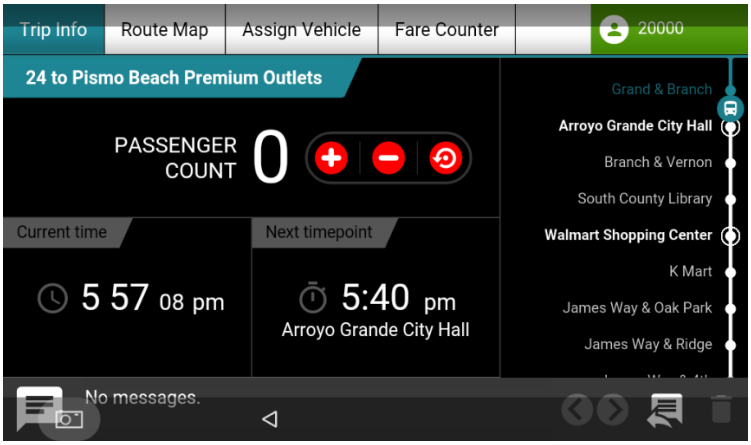
Secure login credentials required.



Driver able to assign available route to block

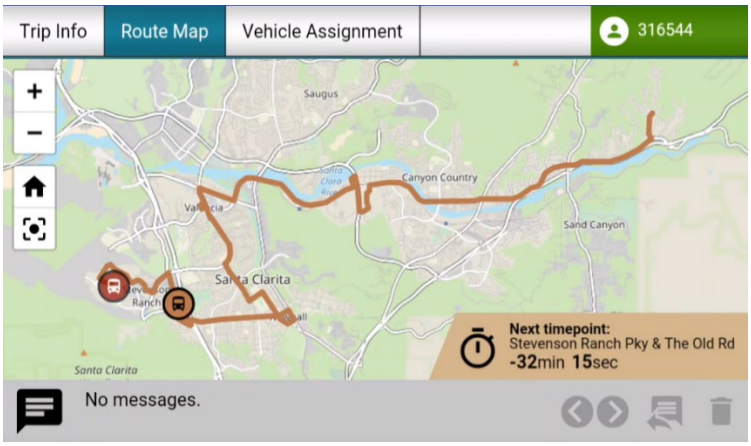


Top right of screen - user profile with available settings

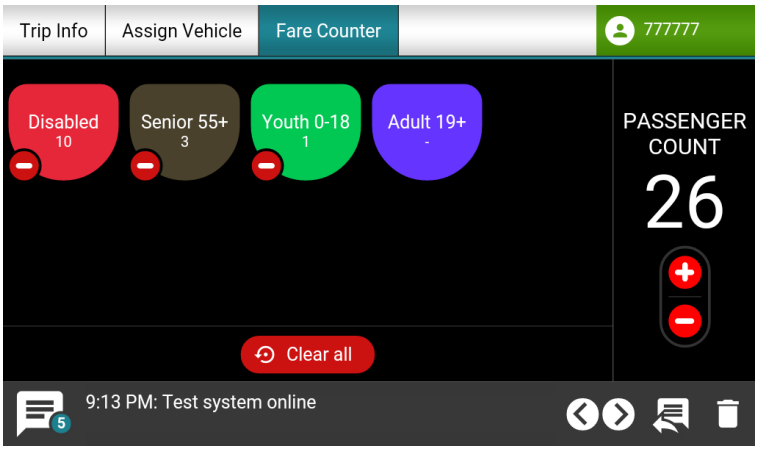


Trip Info showcasing:

Trip Name
Current Time
Next Timepoint
Vertical Ribbon on bus stops and location of vehicle



Route map view

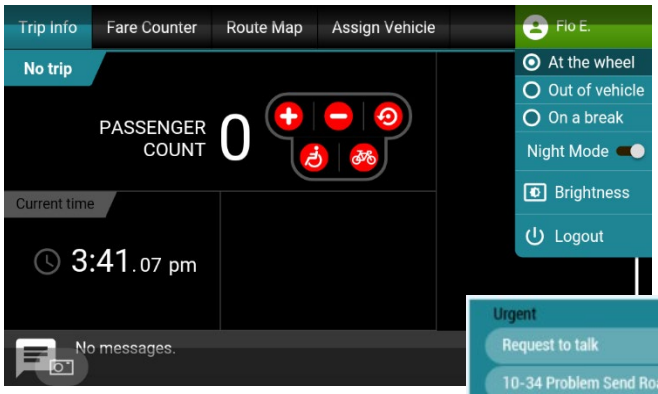


Fare Counting – Manual input of Passengers by the Driver

Passenger Count – total on bus
Coloured tabs for each fare prices, press on tab to increase passenger.

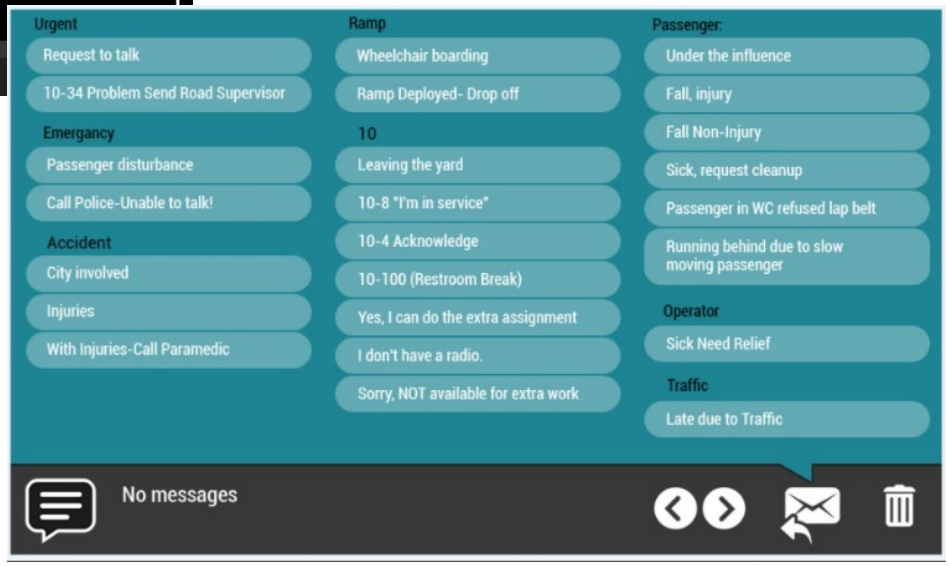
Features:

Tabs	Description
Block/Run Selection	Allows a vehicle operator to choose their run or block schedule for the day. Useful when Dispatcher is not available to assign buses/ shifts (e.g.: weekends). It also can be used to manage the unexpected.
Passenger category counting	Allows a vehicle operator to designate a boarding category to boarding passenger at any stop. This data flows through *CNX Analysis*.
Trip turns / Heat map	Bird's eye view of current trip and status. Ensures seasonal drivers are on the right track!
Real-Time load "0"	If it's important for you to track a real-time load, especially when trying to keep social distance, the operator can "0" out the load to keep it accurate
Paddle	The vehicle operator sees a useful stop by stop listing along with time-point times and current time.
Messaging	Communication between Dispatch & Driver. Messages scroll along bottom of MDT screen, when vehicle stops. Useful in an emergency when driver does not want to announce issue via Radio as passengers may overhear.



screenshot of MDT screen (location of messaging capability)

pre-defined messages available for communication



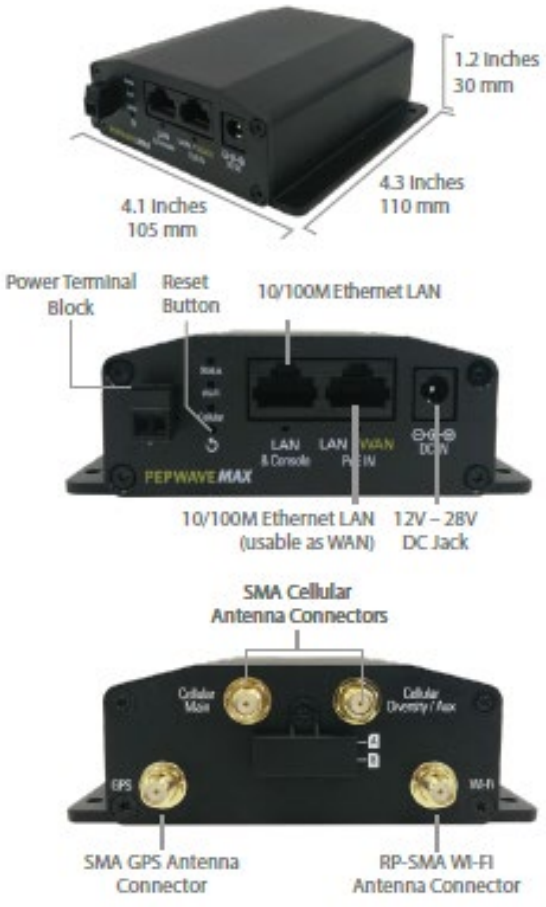
System connectivity – Max BR1 mini

Connexionz will install a BR1 modem on each fixed route vehicle. This will ensure consistent connectivity with 1-second location updates. This modem allows for future integrations which might require connectivity like fare collection or video systems. The BR1 modem is a Rugged 4G LTE Router with automatic failover. The BR1 mini offers redundant SIM slots with automatic switching, DC or terminal block power capability, advanced GPS fleet tracking, and remote management, all packed into a durable metal enclosure.

- Out of Band Management, IoT, and M2M Telemetry
- Add-On WAN Capabilities
- Redundant SIM Slots for Multiple Carriers
- Supports for Verizon, ATT, T-Mobile, and Sprint
- Fleet Tracking & Management
- Terminal block for secure power supply

Connexionz can also install a BR1 modem on vehicles which might require tracking only, but none of the enhanced integrated vehicle functionality.

In emergency situations, you can dispatch the backup vehicles to fixed routes so that the system can still track mileage and produce predictive arrivals.



WAN Interface	1x 10/100M Ethernet Port 1x Embedded LTE Modem with Redundant SIM Slot
LAN Interface	1x 10/100M Ethernet Port
Wi-Fi Interface	802.11b/g/n Wi-Fi WAN or AP
Router Throughput	100 Mbps
Recommended Users	60
LTE Modem	Downlink/Uplink Data rate: 150Mbps/50Mbps
LTE-A Modem	Downlink/Uplink Data rate: 300Mbps/50Mbps
Cellular and GPS Antenna Connector	2x SMA Antenna Connectors 1x SMA GPS Antenna Connector 1x Wi-Fi Connector
Power Input	DC Jack/Terminal Block: 12V – 28V DC Passive PoE Input (WAN Port, 12V – 28V DC)
Power Consumption	12W (max.)
Dimensions	4.1 x 4.3 x 1.2 inches 105 x 110 x 30 mm
Weight	0.54 pound 244 grams
Operating Temperature	-40° – 149°F -40° – 65°C
Humidity	15% – 95% (non-condensing)
Certifications	FCC, CE, RoHS, E-Mark, IC, EN 61373: Shock and Vibration Resistance, EN 50155: Railway Applications - Electronic Equipment used on Rolling Stock, EN 61000: Electromagnetic Compatibility
Warranty	2-Year Limited Warranty

Headsign Integration

The Connexionz AVL system continuously updates headsigns without operator control by using dynamic features that group destinations. It allows certain pre, post, and mid-route changes to help your riders easily identify their routes.

We have years of experience with Hanover, Luminator-Twinvision.

During our vehicle inspection, we can confirm that all signs have updated firmware and can accept integration. Occasionally we find a few old buses which need small upgrades, which we will walk you through.

LUMINATOR TECHNOLOGY GROUP

Automatic Voice Annunciator System

With its significantly expanded visual component, the Automatic Audio-Visual Announcement System ***CNX AAVAS*** uses state-of-the-art Text to Speech (TTS) hardware embedded in the *CNX Medius* to make audio announcements.

The system can be used with existing internal and existing speakers and existing or new next stop LED displays via J1708 connection.

The LED integration included displays stop requests and next-stop information throughout the trip, and any service alerts.

Automatic volume control (option) uses discreet microphones to monitor onboard noise levels, or volume can be controlled via web application, Bluetooth by laptop or mobile device.

Audio messages created and easily modified using state-of-the-art Text to Speech (TTS). We recommend using our professional quality TTS instead of recorded voice talent, as our TTS system can be immediately updated to reflect changes in service.

TTS pronunciation is tuned right from the desktop to correct for any unique or custom pronunciation situations. We believe these simple, automated processes make for an effective, accurate, and ADA compliant transit service. Multi-language support is also available.

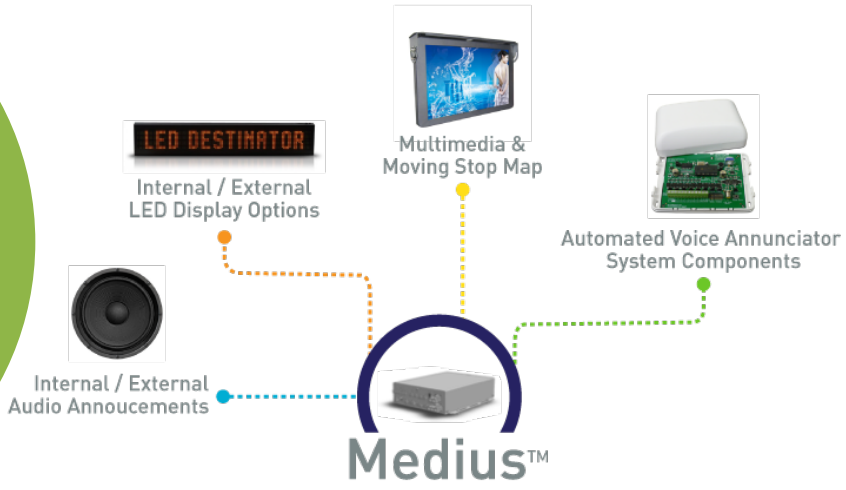
CNX AAVAS performs 'dual zone' announcements. This means the destination/ route on the outside and next-stop on the inside of the bus. Not all competitors are similar in this regard.

CNX AAVAS audio and text messages are configured using the CNX Route Planner application.

We've included internal LED signs from Hanover (L057) as part of this system. A partner Connexionz has been working with for over ten years. Their product is protected by a 12-year warranty, we've included a data sheet in the appendix.

For full ADA compliance, the proposed system should include not only voice announcements, but also visual announcements via the LED sign.

The AVA System receives its data over the same communication network used to track the buses. Text-to-speech does not require additional resources to record and edit audio files, multi-lingual support is available. We supply all tools you need to set trigger zones for announcements.



Onboard Multimedia / Infotainment System

Connexionz optional Multimedia (LCD) solution can deploy a wide range of videos, photos and service alerts in media formats including JPG, MPG, AVI, PDF, etc. Screen layouts and visual deployments can be completely customized with no additional Central Processing Unit (CPU). We can provide a wide range of examples/templates to use for new or existing on-board LCD displays.

Our media solution was developed in-house as an add-on to our core system. This means there is no extra charge for media SaaS, and you need only to invest in your display hardware (LCD screens and HDMI cables), a one-time license, and installation. We would be happy to price this option if budgets allow. Of note, the majority of CNX clients have deployed the multimedia system.

PROJECT MANAGEMENT

Methodology

Communication: is the key to well-run projects. Connexionz will use Microsoft Teams for voice and video conference, screen-sharing, and web-based project management tools.

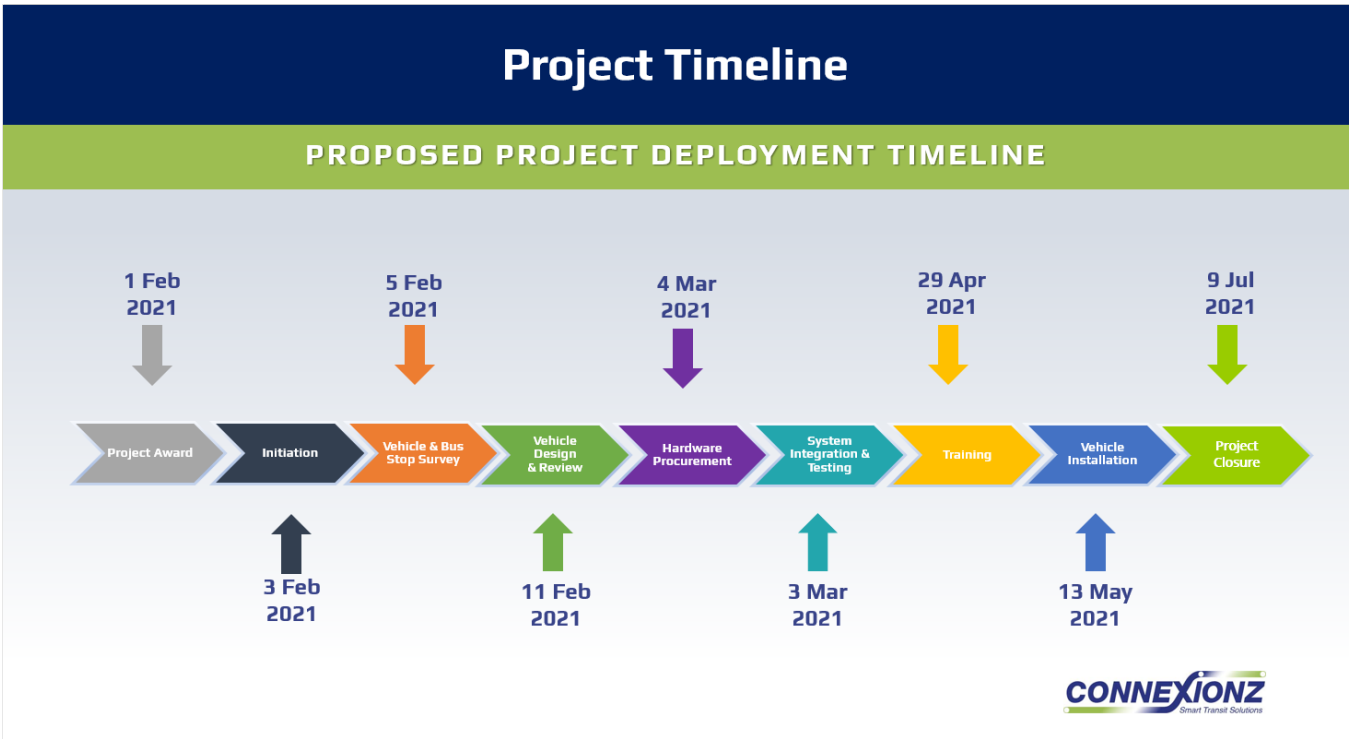
Connexionz depends on the agile project-tracking Atlassian software. A web-based software providing team workspaces to run projects and issue tracking.

Integrated with Microsoft Dynamics Business Central is the ERP system for all "house-keeping" requirements. Contracts, Customer assets, warehouse, inventory management and accounting system.

Our clients can feel confident that we use the best up-to-date tools available to manage projects. The integrated technologies we use ensure everyone interprets project delivery the same way, despite any differences in physical locations for our staff.

Documentation, Surveys, System Design: We want you to understand from the beginning how important management and our internal scheduling are to the success of this project. The process starts with a thorough site survey and an initial information exchange upon contract signing.

Project Timeline



We ensure your Project Manager remains your main point of contact throughout deployment and consistently presents you with project updates. These will include pre/post meeting minutes, and project documentation and schedules. Your Project Manager will work diligently to scope every instance of action required and communicate between the City of Racine and Connexionz.

We estimate a project manager spends at least 200 hours directly managing your project, which does not include extra on-site and/or group meetings. Project manager's and on-site technicians' hours make up the largest number of resource hours attributed to this project.

We're confident that the high level of attention we give to project management is one of the main reasons confirming Connexionz as the best choice for this project.

On-site and remote support in the US is provided by our lead field service technician with assistance from Connexionz staff. You can be rest assured our field service technician has installed proven systems like yours into hundreds of buses across the United States.

The operations team is overseen by our operations team manager while our customer support manager is responsible for delivering remote support to agencies. All delivery personnel are in the US.

Deliverables

All project records such as reports, presentations, and graphics are delivered in electronic form.

Connexionz will deliver:

- Draft and Final Project Project Plan (PMP)
- Bi-Weekly Project Status Calls through the entire deployment
- Monthly progress reports with schedule updates
- Project team meetings (including agenda, action items, summary meeting notes)
- Participation in other stakeholder meetings
- Presentation materials

After every vehicle installation, our senior technician will confirm the listed equipment that has been installed and report back to Connexionz Project Manager. The Project Manager will send you a weekly report that verifies the installation and lists what is yet to be installed.

Onsite Discovery + System Surveys

Connexionz believes that a good start leads to a good finish. We kick off every project with two important processes that set us off on the 'right foot'.

Discovery Meeting

Upon contract signing, Connexionz plans an onsite meeting with our Connexionz Chief Engineer, Project Manager, and Stakeholders from the City of Racine. We spend time working through the RFP requirements, any custom development items and gather the prerequisites to configure the system. This ensures that we are all on the 'same page' and all stakeholders are aware of their responsibilities.

We will use the learnings from this meeting to produce a Solution Design acceptance criterion which will outline all the system configuration. This meeting will also lead to presentation of the final project schedule.

System Surveys

Around the same time, as the discovery meeting, we survey all stops and vehicles.

Stops - includes a specific geolocation and hardware at the stop.

Vehicle – Schematics of each model/make of vehicle is sourced and what equipment is currently onboard. Every vehicle might have slightly different installation requirements, for that reason we ensure that we have every bus 'mapped' before ordering parts and completing our full install.

We document the entire system so that the new 'basis' for data is clean and absolutely accurate.

We'll work on completing the entire service in *CNX Planner* and then teach you how to use it so future changes can be made easily and instantaneously.

Project Schedule

A summary of project schedule is tabled below and attached in appendices is the detailed Microsoft Project with Sections, tasks, estimated start and finish dates, dependencies, resource hours, critical path with Gantt Chart.

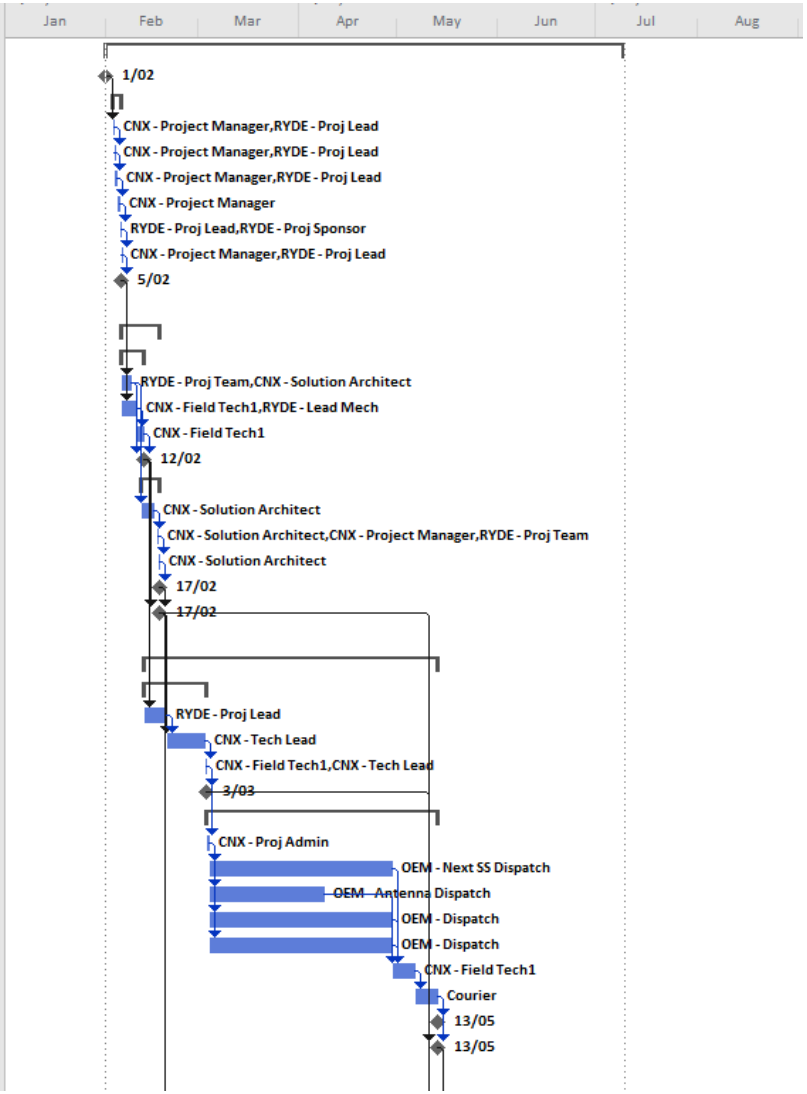
Phase	Summary of Work
Project Award	Connexionz will work with the City of Racine to finalize, approve, and execute documents.
Project Initiation	Connexionz will provide a full project schedule with estimated timelines.
Solution Discovery & Design	Connexionz working with the City of Racine, will review the RFP Requirements, review, update/clarify and then approval.
Vehicle Survey	Connexionz will provide an onsite review of each vehicle to confirm final Build of Material (including rear mount choice).
Stop Survey	Connexionz will provide a report on each stop, specific geolocation, and hardware at stop.
Vehicle Design Review	Connexionz will review schematics for each vehicle and order outstanding hardware mounts, cables, harness, fixtures etc. Connexionz will deliver system design and schematics to the City of Racine Project Manager. Connexionz will deliver 'sign-off checklist' for each vehicle ready for end of project paperwork.
Hardware Order	Once hardware quantities have been confirmed, Purchase Orders will be submitted to relevant suppliers
Vehicle Installation & Training	Connexionz will begin the installation process based on project managed availability of vehicles. Our goal will be to finish 1 vehicle per day and finish the entire installation and final testing within 40 working days. Concurrently we will schedule the on-site training and continue to work with the City of Racine remotely to create “test” playlists. The goal will be that all initial training is complete and “test” playlists have been created in time for project acceptance.
Project Acceptance	Connexionz will have already provided signoff checklists for each vehicle. The City of Racine will be required to validate the systems on the road tests within their own schedule.

Resource Hours on Project

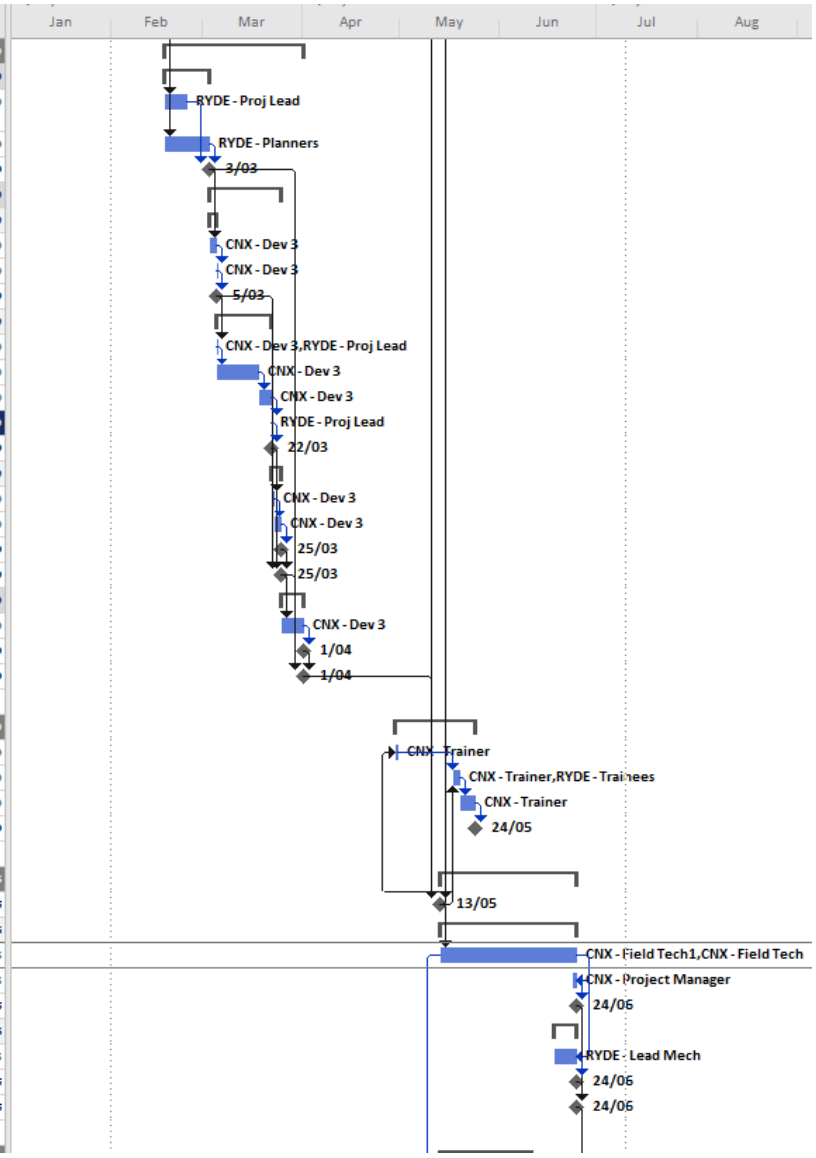
Resource	Hours on Project
CNX Project Manager	200 hours between Griffin Lauerman and Vaughan Keenan
System Design Manager	180 hours in collaboration with Mike Stocks and Tomas Hedman
Field Service Technicians	600 hours in collaboration with Pam Heser and Jorge Gutierrez to complete the vehicle survey, vehicle installations and testing/sign-off.

Project Schedule – Gantt Chart

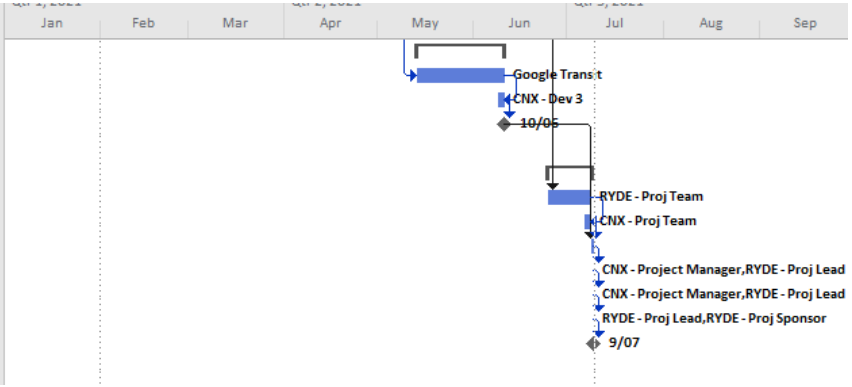
	Task Name	Duration	Start	Finish	Critica
1	**Racine Transit - AVL/CAD Implementation**	**114.75 days**	**Mon 1/02/21**	**Fri 9/07/21**	**Yes**
2	***Project NTP***	***0 hrs***	***Mon 1/02/21***	***Mon 1/02/21***	***Yes***
3	**Project Initiation**	**2.88 days**	**Wed 3/02/21**	**Fri 5/02/21**	**Yes**
4	Project Charter/Scope & Schedule Review	0.5 days	Wed 3/02/21	Wed 3/02/21	Yes
5	Project Issues Process Review	1 hr	Wed 3/02/21	Wed 3/02/21	Yes
6	Project Risks Process Review, Identification & Owner Assignment	0.5 days	Wed 3/02/21	Thu 4/02/21	Yes
7	Project Charter/Scope & Schedule Updates	1 day	Thu 4/02/21	Fri 5/02/21	Yes
8	**Project Charter/Scope & Schedule Approval**	**0.5 days**	**Fri 5/02/21**	**Fri 5/02/21**	**Yes**
9	Future Task Scheduling & Bookings	2 hrs	Fri 5/02/21	Fri 5/02/21	Yes
10	***Project Initiation - Complete***	***0 hrs***	***Fri 5/02/21***	***Fri 5/02/21***	***Yes***
11					
12	**Solution Discovery & Design**	**7.63 days**	**Fri 5/02/21**	**Wed 17/02/21**	**Yes**
13	**Solution Discovery**	**5 days**	**Fri 5/02/21**	**Fri 12/02/21**	**Yes**
14	System Configuration, Pre & Post Trip Inspect App & Integration Requirements	1 day	Fri 5/02/21	Mon 8/02/21	No
15	Vehicle Survey & Installation Requirements	3 days	Fri 5/02/21	Wed 10/02/21	Yes
16	Stop Survey	2 days	Wed 10/02/2:	Fri 12/02/21	Yes
17	***Solution Discovery - Complete***	***0 hrs***	***Fri 12/02/21***	***Fri 12/02/21***	***Yes***
18	**Solution Design, Review & Approval**	**3.63 days**	**Thu 11/02/21**	**Wed 17/02/21**	**No**
19	System Configuration, & Integration Specification Creation	16 hrs	Thu 11/02/21	Mon 15/02/21	No
20	System Configuration, Integration Specification Review	1 hr	Tue 16/02/21	Tue 16/02/21	No
21	System Configuration, Integration Specification Updates/Clarifications	0.5 days	Wed 17/02/2:	Wed 17/02/21	No
22	***Solution Design, Review & Approval - Complete***	***0 hrs***	***Wed 17/02/2***	***Wed 17/02/21***	***No***
23	***Solution Discovery & Design - Complete***	***0 hrs***	***Wed 17/02/2***	***Wed 17/02/21***	***No***
24					
25	**Vehicle Design & Hardware Procurement & Shipping**	**64 days**	**Fri 12/02/21**	**Thu 13/05/21**	**Yes**
26	**Vehicle Design**	**13 days**	**Fri 12/02/21**	**Wed 3/03/21**	**Yes**
27	Send Vehicle Manufacturer Schematics	1 wk	Fri 12/02/21	Fri 19/02/21	Yes
28	Vehicle Install Schematics & Hardware BOM Creation	1.5 wks	Fri 19/02/21	Wed 3/03/21	Yes
29	Vehicle Install Schematics Review & BOM Confirmation	0.5 days	Wed 3/03/21	Wed 3/03/21	Yes
30	***Vehicle Design - Complete***	***0 hrs***	***Wed 3/03/21***	***Wed 3/03/21***	***No***
31	**Hardware Procurement & Shipping**	**51 days**	**Wed 3/03/21**	**Thu 13/05/21**	**Yes**
32	Hardware Ordering	1 day	Wed 3/03/21	Thu 4/03/21	Yes
33	Connexionz MDT Tablet Order Fulfilment & Shipping	8 wks	Thu 4/03/21	Thu 29/04/21	Yes
34	Tablet Antenna Order Fulfilment & Shipping	5 wks	Thu 4/03/21	Thu 8/04/21	No
35	Pepwave BR1 Modem Order Fulfilment & Shipping	8 wks	Thu 4/03/21	Thu 29/04/21	Yes
36	Vehicle Specific Cable Order Fulfilment	8 wks	Thu 4/03/21	Thu 29/04/21	Yes
37	Compile Bus Specific Hardware & Package for Shipping	1 wk	Thu 29/04/21	Thu 6/05/21	Yes
38	Hardware Shipping	1 wk	Thu 6/05/21	Thu 13/05/21	Yes
39	***Hardware Procurement & Shipping - Complete***	***0 hrs***	***Thu 13/05/21***	***Thu 13/05/21***	***No***
40	***Vehicle Design & Hardware Procurement & Shipping - Complete***	***0 hrs***	***Thu 13/05/21***	***Thu 13/05/21***	***Yes***
41					



	Task Name	Duration	Start	Finish	Critica
42	**Solution Installation & Configuration**	**31 days**	**Wed 17/02/2**	**Thu 1/04/21**	**No**
43	**Provide Full System Configuration Items**	**10 days**	**Wed 17/02/2**	**Wed 3/03/21**	**No**
44	Provide Access to Vehicle Number, Driver Lists, Users, Role Details, Fare Type Details, Website Logo & Content, App Favicon, Provide Vehicle & Office Fixed IP Address Details	1 wk	Wed 17/02/21	Wed 24/02/21	No
45	Provide Access to Routes, Patterns, & Schedule Data	2 wks	Wed 17/02/2:	Wed 3/03/21	No
46	***Provide Full System Configuration Items - Complete***	***0 hrs***	***Wed 3/03/21***	***Wed 3/03/21***	***No***
47	**ITS System Installation & Configuration**	**16 days**	**Wed 3/03/21**	**Thu 25/03/21**	**No**
48	**Hosting & ITS Install**	**2.25 days**	**Wed 3/03/21**	**Fri 5/03/21**	**No**
49	Build Hosting Environment, Install TransitManager & Configuration	2 days	Wed 3/03/21	Fri 5/03/21	No
50	IP Address Configuration	2 hrs	Fri 5/03/21	Fri 5/03/21	No
51	***Hosting & ITS Install - Complete***	***0 hrs***	***Fri 5/03/21***	***Fri 5/03/21***	***No***
52	**Stops, Routes & Schedule Configuration**	**10.75 days**	**Fri 5/03/21**	**Mon 22/03/21**	**No**
53	Stop, Route & Schedule Data Review Workshop	1 hr	Fri 5/03/21	Fri 5/03/21	No
54	Stop & Route Configuration & Schedule Creation	1.7 wks	Fri 5/03/21	Thu 18/03/21	No
55	Stop & Route Configuration & Schedule Review Workshop	2 days	Thu 18/03/21	Mon 22/03/21	No
56	**Stops, Routes & Schedule Configuration Approval**	**1 hr**	**Mon 22/03/2**	**Mon 22/03/21**	**No**
57	***Stops, Routes & Schedule Configuration Complete***	***0 hrs***	***Mon 22/03/2***	***Mon 22/03/21***	***No***
58	**PIN Website & Subscriptions Configuration**	**3 days**	**Mon 22/03/2**	**Thu 25/03/21**	**No**
59	Branded Mobile App Configuration & Deployment	1 day	Mon 22/03/2:	Tue 23/03/21	No
60	Public PIN Website & Subscriptions Configuration	2 days	Tue 23/03/21	Thu 25/03/21	No
61	***PIN Website & Subscriptions Configuration - Complete***	***0 hrs***	***Thu 25/03/21***	***Thu 25/03/21***	***No***
62	***ITS System Setup & Configuration - Complete***	***0 hrs***	***Thu 25/03/21***	***Thu 25/03/21***	***No***
63	**Tablet Configuration & Testing**	**5 days**	**Thu 25/03/21**	**Thu 1/04/21**	**No**
64	Tablet Configuration & Testing	5 days	Thu 25/03/21	Thu 1/04/21	No
65	***Tablet Configuration & Testing - Complete***	***0 hrs***	***Thu 1/04/21***	***Thu 1/04/21***	***No***
66	***Solution Software Installation & Configuration - Complete***	***0 hrs***	***Thu 1/04/21***	***Thu 1/04/21***	***No***
67					
68	**Training**	**17 days**	**Thu 29/04/21**	**Mon 24/05/21**	**No**
69	Create Training Plan	0.5 days	Thu 29/04/21	Fri 30/04/21	No
70	Onsite Training	2 days	Mon 17/05/2:	Wed 19/05/21	No
71	Go-live Support	3 days	Wed 19/05/2:	Mon 24/05/21	No
72	***Training - Complete***	***0 hrs***	***Mon 24/05/2***	***Mon 24/05/21***	***No***
73					
74	**Vehicle Installation, Testing & Sign-off**	**30 days**	**Thu 13/05/21**	**Thu 24/06/21**	**Yes**
75	***Installation Start***	***0 hrs***	***Thu 13/05/21***	***Thu 13/05/21***	***Yes***
76	**Vehicle Installation & Testing**	**30 days**	**Thu 13/05/21**	**Thu 24/06/21**	**Yes**
77	CNX Vehicle Installation & Testing	6 wks	Thu 13/05/21	Thu 24/06/21	Yes
78	Compile Test Reports & Hardware Warranty Certificates	1 day	Wed 23/06/2:	Thu 24/06/21	Yes
79	***Vehicle Installation & Testing - Complete***	***0 hrs***	***Thu 24/06/21***	***Thu 24/06/21***	***Yes***
80	**Vehicle Installation & Road Test Sign-offs**	**5 days**	**Thu 17/06/21**	**Thu 24/06/21**	**Yes**
81	Vehicle Installation Inspection & Road Test Sign-off	1 wk	Thu 17/06/21	Thu 24/06/21	Yes
82	***Vehicle Installation & Road Test Sign-offs - Complete***	***0 hrs***	***Thu 24/06/21***	***Thu 24/06/21***	***Yes***
83	***Vehicle Installation, Testing & Sign-off - Complete***	***0 days***	***Thu 24/06/21***	***Thu 24/06/21***	***Yes***
84					



	Task Name	Duration	Start	Finish	Critica
85	Google Transit Integration	20 days	Thu 13/05/21	Thu 10/06/21	No
86	GTFS & GTFS- RT Integration & Google Transit Validation	4 wks	Thu 13/05/21	Thu 10/06/21	No
87	Google Transit Integration Support	2 days	Tue 8/06/21	Thu 10/06/21	No
88	***Google Transit Integration - Complete***	***0 days***	***Thu 10/06/21***	***Thu 10/06/21***	***No***
89					
90	Solution Acceptance Testing, Support & Project Closure	10.88 days	Thu 24/06/21	Fri 9/07/21	Yes
91	Solution Monitoring	2 wks	Thu 24/06/21	Thu 8/07/21	Yes
92	Solution Support & Tuning	2 days	Tue 6/07/21	Thu 8/07/21	Yes
93	Solution Approval	0.25 days	Thu 8/07/21	Fri 9/07/21	Yes
94	Requirements Compliance Review	1 hr	Fri 9/07/21	Fri 9/07/21	Yes
95	Confirm SMA, Setup Support Desk & BAU Support Process	0.25 days	Fri 9/07/21	Fri 9/07/21	Yes
96	Full Project Approval & Closure	0.25 days	Fri 9/07/21	Fri 9/07/21	Yes
97	***Solution Acceptance Testing, Support & Project Closure - Complete***	***0 hrs***	***Fri 9/07/21***	***Fri 9/07/21***	***Yes***



TRAINING

Our experience tells us it is prudent to provide a larger portion of the project to training particularly for individuals in anchor roles.

We have a standard format for the baseline education; however, we design and deliver real-life business scenarios so that users will be able discuss issues specific to them during the training.

Connexionz believes that delivering effective training is a critical measure of the success of our projects. Our staff use the ***CNX TransitManager*** every single day of the week and are best-qualified to teach you about it. We never sub-contract training – our modules are developed and taught exclusively by Connexionz' staff.

All modules will encompass multiple delivery methods including theory and principles, group discussions, demonstrations, and hands-on activities using the actual system.

Connexionz staff are happy to follow your lead and schedule training around your service operations. The optimum number per session is 6 to 8 people. Smaller classes are proven to result in better retention and more confident course participants.

'Train the Trainer' type courses are the best way of ensuring that your senior staff can then train other teams. Manuals are available and copies available from our knowledge base portal via the online helpdesk.

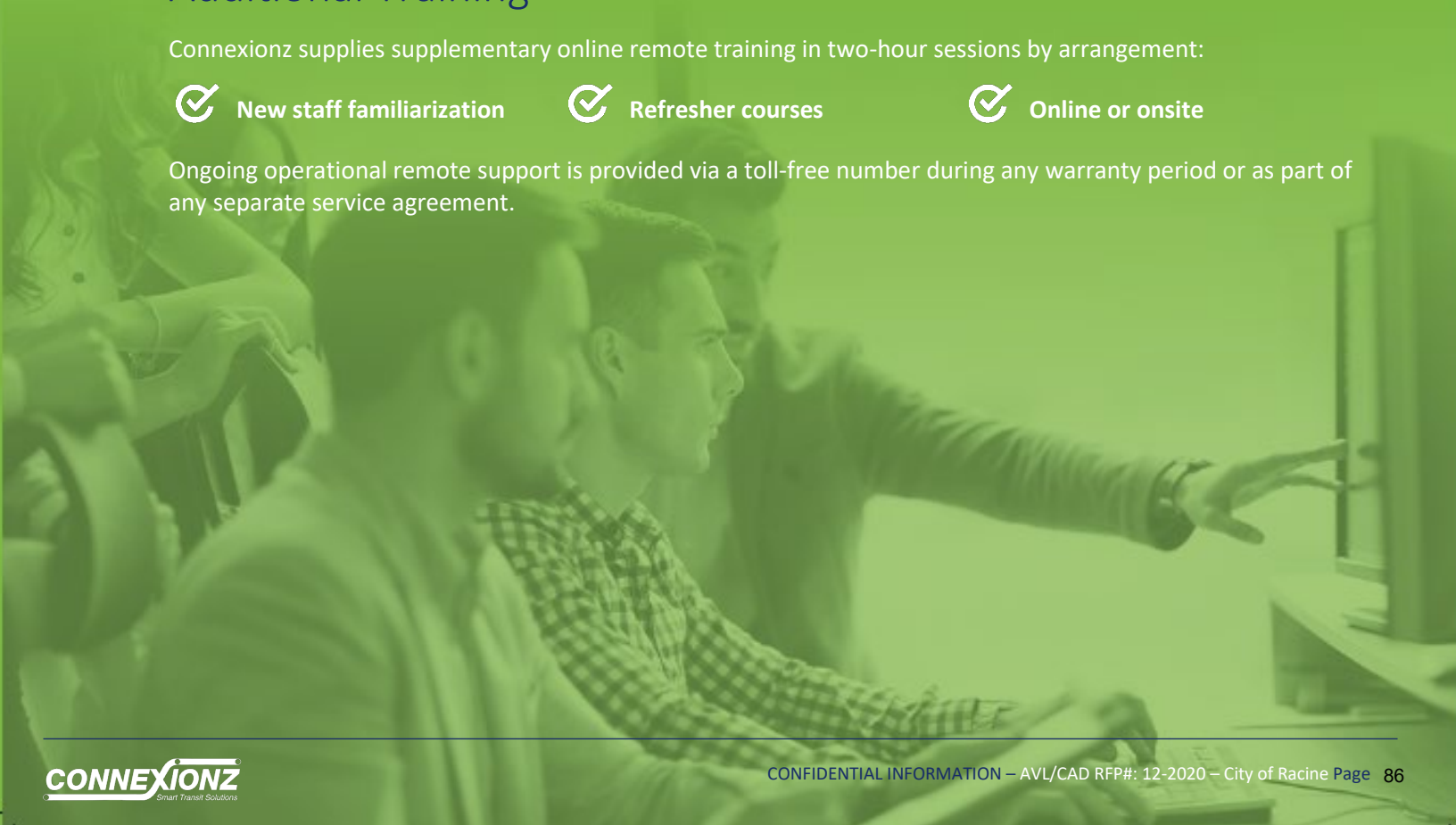
Training on *CNX Dispatch* takes place once on-vehicle hardware is installed, and a few vehicles are tracking. Follow-up training is offered shortly afterward as the fleet is brought on-line, we transfer our knowledge and assist *CNX Dispatch* operators to rapidly expand their skills once they are familiar with the baseline education.

Additional Training

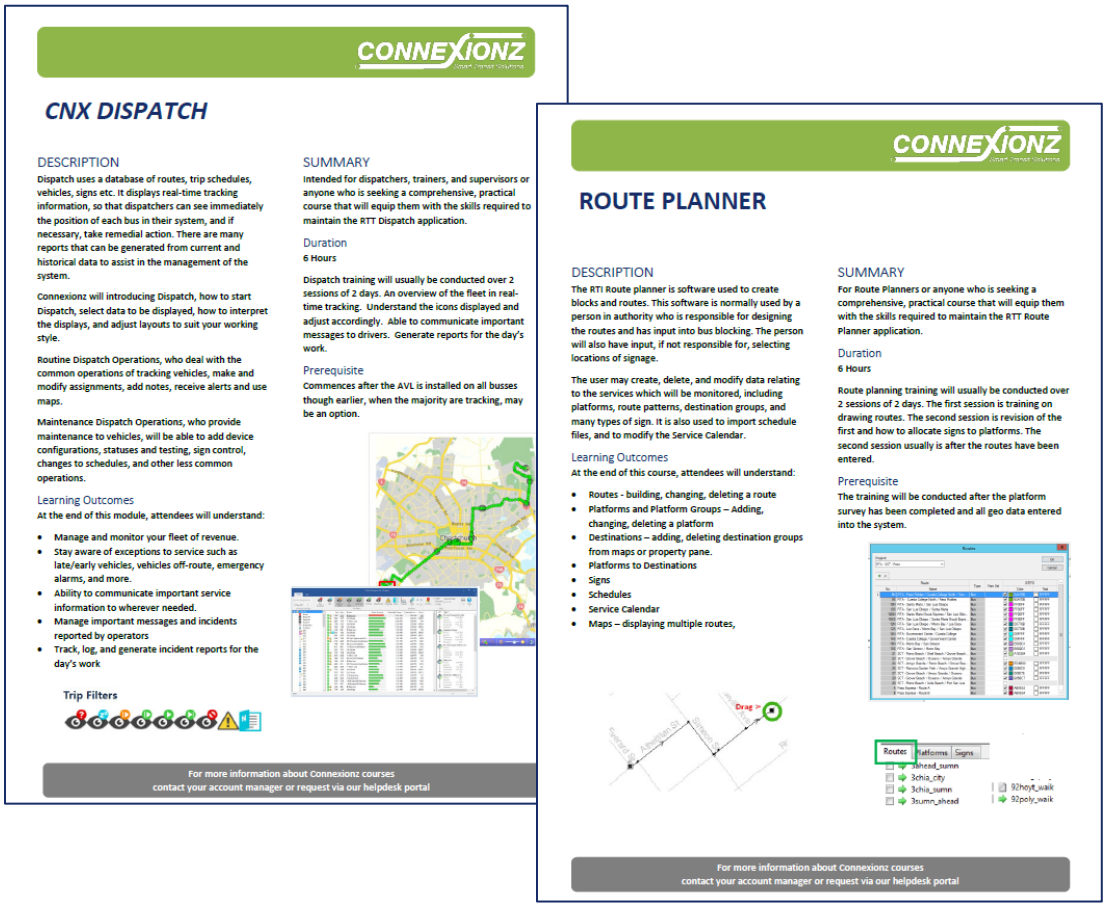
Connexionz supplies supplementary online remote training in two-hour sessions by arrangement:

- **New staff familiarization**
- **Refresher courses**
- **Online or onsite**

Ongoing operational remote support is provided via a toll-free number during any warranty period or as part of any separate service agreement.



Training Overview Brochure



CONNEXIONZ

CNX DISPATCH

DESCRIPTION

Dispatch uses a database of routes, trip schedules, vehicles, signs etc. It displays real-time tracking information, so that dispatchers can see immediately the position of each bus in their system, and if necessary, take remedial action. There are many reports that can be generated from current and historical data to assist in the management of the system.

Connexionz will introducing Dispatch, how to start Dispatch, select data to be displayed, how to interpret the displays, and adjust layouts to suit your working style.

Routine Dispatch Operations, who deal with the common operations of tracking vehicles, make and modify assignments, add notes, receive alerts and use maps.

Maintenance Dispatch Operations, who provide maintenance to vehicles, will be able to add device configurations, statuses and testing, sign control, changes to schedules, and other less common operations.

Learning Outcomes

At the end of this module, attendees will understand:

- Manage and monitor your fleet of revenue.
- Stay aware of exceptions to service such as late/early vehicles, vehicles off-route, emergency alarms, and more.
- Ability to communicate important service information to wherever needed.
- Manage important messages and incidents reported by operators
- Track, log, and generate incident reports for the day's work

Trip Filters

SUMMARY

Intended for dispatchers, trainers, and supervisors or anyone who is seeking a comprehensive, practical course that will equip them with the skills required to maintain the RTT Dispatch application.

Duration

6 Hours

Dispatch training will usually be conducted over 2 sessions of 2 days. An overview of the fleet in real-time tracking. Understand the icons displayed and adjust accordingly. Able to communicate important messages to drivers. Generate reports for the day's work.

Prerequisite

Commences after the AVL is installed on all busses though earlier, when the majority are tracking, may be an option.

For more information about Connexionz courses
contact your account manager or request via our helpdesk portal

CONNEXIONZ

ROUTE PLANNER

DESCRIPTION

The RTI Route planner is software used to create blocks and routes. This software is normally used by a person in authority who is responsible for designing the routes and has input into bus blocking. The person will also have input, if not responsible for, selecting locations of signage.

The user may create, delete, and modify data relating to the services which will be monitored, including platforms, route patterns, destination groups, and many types of sign. It is also used to import schedule files, and to modify the Service Calendar.

Learning Outcomes

At the end of this course, attendees will understand:

- Routes - building, changing, deleting a route
- Platforms and Platform Groups – Adding, changing, deleting a platform
- Destinations – adding, deleting destination groups from maps or property pane.
- Platforms to Destinations
- Signs
- Schedules
- Service Calendar
- Maps – displaying multiple routes,

SUMMARY

For Route Planners or anyone who is seeking a comprehensive, practical course that will equip them with the skills required to maintain the RTT Route Planner application.

Duration

6 Hours

Route planning training will usually be conducted over 2 sessions of 2 days. The first session is training on drawing routes. The second session is revision of the first and how to allocate signs to platforms. The second session usually is after the routes have been entered.

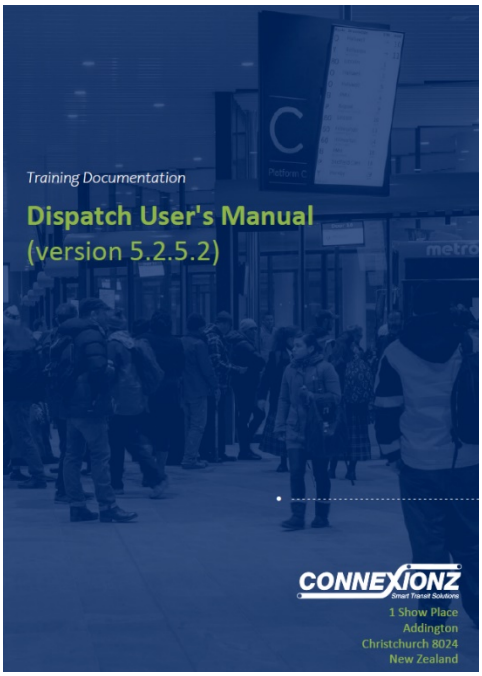
Prerequisite

The training will be conducted after the platform survey has been completed and all geo data entered into the system.

Routes Platforms Signs

For more information about Connexionz courses
contact your account manager or request via our helpdesk portal

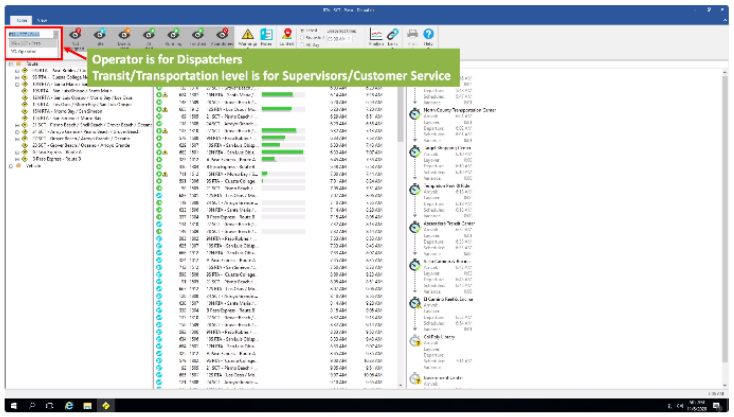
Training Manuals



Online Training Videos

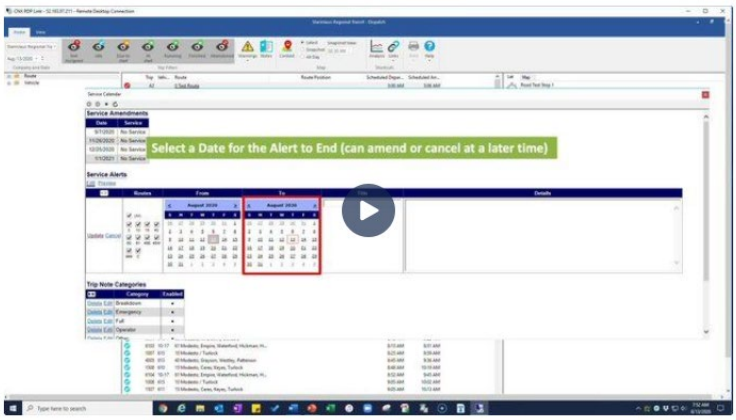
Learning at your own pace is a great way to cement the knowledge users have been taught on their courses. A variety of topics are available via Connexionz helpdesk portal. Each video provides a visual and audible clip with a duration of approximately 3-5 minutes.

CNX Dispatch Overview



Connexionz Training videos

How to create Service Alerts



Creating Platform Groups

QUALITY ASSURANCE

Quality assurance is the systematic process of determining whether a product or service meets specified requirements.

Connexionz has an outstanding quality-assurance plan to ensure the ITS system we install for you meets expectations and specifications and is set to perform for at least ten years. Our QA plan covers all our deployment processes and follows up with processes to manage any issues and offers service and maintenance agreements.

The Connexionz QA plan identifies three main processes.

Connexionz has a written policy on each process, describing it in detail, all available to our customers on request. We explain these processes prior to contract signing so all members of the project team understand the approach and how Connexionz confidently assures the quality of delivery.

Quality Management Process

The Connexionz plan allocates Quality Assurance roles and responsibilities to every person on the project team and to its independent auditors. The process describes all the test reviews, audits, and reports each team member and independent specialist must submit to properly record the QA process, and specifies who such documents should be sent to. The plan specifies correct storage and version management of all documentation and software code.

It is the project manager's job to identify and describe every product used for the project and develop a testing plan for significant items. We hold our hardware components and software applications to the most rigorous testing procedures which can include inspections; peer reviews; records of sub- contractors' quality programs; cost records prior to acceptance of non-conforming material; internal and client audits; and more. A Quality Log is kept by the project manager.

Issue Management Process

Connexionz aims to manage project issues as they arise with a plan that reflects commitment to quality. An issue is an actual event that has occurred and is impacting the project to an extent that one or more of the project's objectives will not be met. (A risk is an event that is possible or likely, but has not actually happened, and risk management is dealt with under a separate process.) Issues are defined as a request for change; an off- specification defect or bug; or a problem or concern. Issues may be raised at any time during deployment, by anyone.

Our issue management plan defines who is responsible for managing the issue; how stakeholders will behave as the issue is being managed; what the process will be; and describes the parameters used when evaluating and classifying the issue.

It is the project manager's job to identify, prioritize and assess the severity of any issue – then assign an owner to the issue or escalate it to the appropriate authority. With input from the project team, the project manager will then examine the issue, propose options, and implement a resolution. The project manager keeps a log of all issues.

Risk Management Process

We define a risk as an uncertain event that, if it occurs, will influence a project objective. Our risk management plan covers who is responsible for managing the project risk; how stakeholders and project team members will behave to mitigate the risk; the risk management process; and the parameters we use to evaluate and classify the risk.

We recognize two types of risk:

- Threats – risks that will have a negative impact on the project should they occur
- Opportunities – risks that will have a positive impact on the objective of the project should they occur

Mitigating threats will always take priority over maximizing opportunities and we recognize that the earlier a threat-type risk is actively identified, the better it can be mitigated. The plan specifies the processes for identification, assessment, developing a response plan, monitoring of risk indicators, implementation, and execution of decisions. The project manager keeps a log recording risk mitigation and monitoring.

Warranty, Maintenance and Upgrades

Warranty Detail

All hardware supplied under an agreed delivery schedule comes with a two-year warranty.

Extended warranty pricing beyond the two-year warranty is available upon request.

Basic Maintenance and Support Plan

Basic maintenance and support include on- site support as needed for all on-vehicle activities. It does not include the cost of replacing any faulty components outside of the equipment's full warranty period. We test and identify any faulty equipment and replace parts under warranty as necessary, but you pay for replacement parts we install outside of their warranty period.

All support on-site is handled or supported by long-term Connexionz service technicians based in California.

No ***CNX TransitManager*** license fees are (or will be) included because our software costs cover your perpetual license.

Regular software updates for all supplied ITS software applications are included.

Extended Maintenance Plan

Our extended maintenance plan includes the basic maintenance and support plan above as well as an extended warranty for all hardware we supply as part of the initial contract and annual on-site refresher training.

You need our extended maintenance plan to eliminate worry about potential costs of replacing any failed ITS system hardware in future. We are happy to price the cost of

Protecting this equipment. This optional plan covers an annual service check on all your vehicles, to individually test and calibrate the equipment we have installed on a recurring basis.

The Extended Maintenance Plan also includes:

- Annual calibration of third-party sensors (e.g., APC sensors, video systems)
- Annual test, health, and condition checks of all ITS hardware components
- Annual refresher training

Installation Warranty

Connexionz warrants all the installation work and all System hardware/software furnished by us; including, but not limited to, all such work, and System hardware/software provided by our sub-contractors, suppliers, or other manufacturers. All equipment/ components shall be new (not refurbished) and shall be of good quality and free of any defects, faulty materials or workmanship, and perform according to the specifications for at least the two-year warranty period.

During any support period, if Connexionz upgrades its devices to ensure the continued and proper operation of the System as configured for this project, to meet the expectation of a 10-year useful life, Connexionz will assume all costs related to the hardware upgrade, and there shall be no additional cost to the customer.

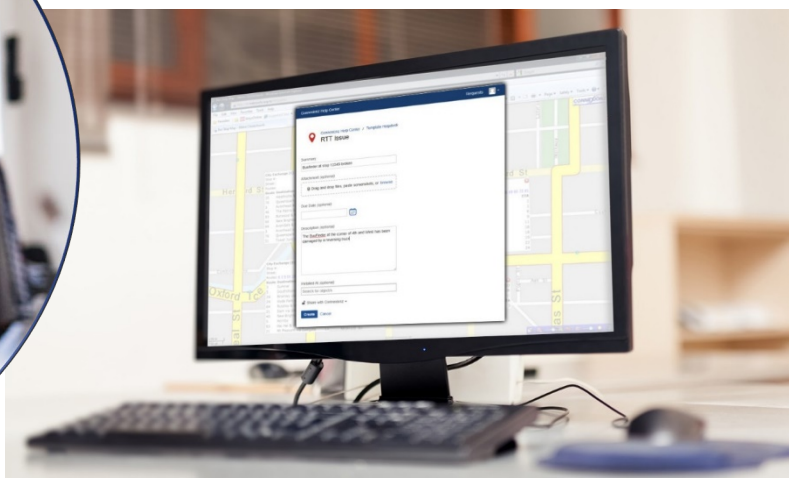
"Fingertip" Diagnostics

Maintenance personnel must have easy access to components for testing, removal, and replacement. All test points necessary to diagnose the equipment while in operation shall be easily accessible, and a “Fingertip” Troubleshooting Guide shall be provided to assist technicians to identify and diagnose problems. Maintenance technicians shall be granted the ability to connect a laptop if needed to diagnose issues.

Implementation Support

Connexionz contacts you directly and consistently during the entire project management and implementation phase with calls twice a week. You are given the personal cell phone numbers of your project team.

We are known for our distinct level of project support both through implementation and after project handover to the support team.



Helpdesk and Support

Any maintenance and support plan gives you access to our online support tool. This web- based tool allows you to log incident reports which will automatically generate a 'ticket' for a support technician.

You can also log issues by emailing our "Support Help-desk." All assets, tickets raised, issues, and communication with staff will be tracked through the web-accessible customer service portal.

Our support staff is also available globally 24/7/365 via a toll-free number. Response times for your initial call via our toll-free number can be measured in minutes.

Our support phone and ticketing solution kick in after System acceptance. You can open/ enter and track issue resolution and timing through our Help Desk telephone number and online Trouble Ticket System anytime, day or night, except Christmas Day. With our Help Desk/Trouble Ticket system and corresponding

Service Level Agreement, we aim to address and resolve any issues or failures as they arise.

Specifically, the system will:

- Assign Ticket number
- Prioritize/classify issue
- Schedule and time tracking of ticket
- Escalation of the ticket (if necessary)
- Ticket Close/resolution

We provide onsite support whenever hardware supplied by Connexionz is identified as being faulty.

Onsite support extends to physical replacement or repair of faulty hardware, but excludes the cost of supplying additional hardware, unless the equipment is otherwise covered by an extended warranty agreement.

Any equipment or software intentionally damaged or damaged through misuse is not covered by our standard warranty.

Software Updates and Upgrades

Connexionz software is continuously updated to the latest and current version, and we introduce new and enhanced features with every release, usually every 6 months.

Connexionz' System is designed for a product life-cycle of at least 10 years. Connexionz agrees that the System and all related installation work shall be subject to the warranties and obligations outlined in this proposal and the RFP. The warranties and obligations shall commence upon System acceptance and end after two years. Maintenance support plans are priced as requested, typically covering five years.

We've provided a maintenance and support plan which also includes a full hardware warranty.

Service Level Agreement (SLA)

We provide our customer and agents with access to knowledgeable technical-support personnel and trained field-service personnel for the successful maintenance and operation of the System.

Our support personnel will, as required:

- Diagnose System problems
- Monitor vehicle on-board units
- Monitor fixed end devices
- Monitor server performance and availability levels
- Troubleshoot hardware and software errors.

SCHEDULE 2 – SERVICE LEVELS AND RESOLUTION TIMES

Service Levels for Response and Resolution of Incidents

The following table describes service levels for resolution of Incidents which cannot be resolved in the initial request logged with the Service Desk.

PRIORITY CATEGORY	DESCRIPTION OF INCIDENT	RESPONSE TIME (from time that Incident is logged)	TARGET RESOLUTION TIME "SUBJECT TO SITE AND HARDWARE ACCESS"
1	Such an Incident will have one or more of the following characteristics: o Operations are interrupted or halted. o Critical deadlines are threatened.	Within 1 (one) hour	Continuing until reinstatement or until a workaround is provided.
2	Such an Incident will have one or more of the following characteristics: o Normal operations are interrupted and may be restricted but User is able to continue working. o The problem affects only 1 (one) User.	Within 8 (eight) business hours	Within 2 (two) business days
3	Such an Incident will have one or more of the following characteristics: o Temporary workaround can be found. o Fault does not adversely impact on normal operations. (Non-critical stock spares can take from 6-12 weeks lead time)	Next business day	Within 5 (five) business days
4	Such an Incident will have one or more of the following characteristics: o General questions or information requests	Next business day	Within mutually agreed timeframes

COST SUMMARY SHEET

	USD $
Total first year cost for proposed solution to include all hardware, software, $ implementation, training, support, hosting, and any other related expenses. Vendor must attach a detailed breakdown of each cost component (line item detail) so City can project future replacement costs.	320,743.00
Indicate your proposed annual costs for on-going maintenance and support.	
Year 2 /	30,000
Year 3 /	32,000
Year 4 /	34,000
Year 5 /	36,000
Year 6 /	38,000
Year 7 /	40,000
Year 8 /	42,000
Year 9 /	44,000
Year 10 /	46,000
List any other costs the City may incur over the course of the proposed project.	Cellular data – Estimate $20/bus/month
PAYMENT TERMS: Final payment will be made Net 30.	30% on project initiation 30% on hardware Delivery 40% on project acceptance
Vendor accepts P-Cards: *The City will not accept any added fees for credit card usage.*	☐ Yes ☒ No

CNX can consider alternative payment types with more information

COST PROPOSAL

Connexionz Limited
27720 Avenue Scott
Unit 190
Santa Clarita, CA, 91355

Name: Brian Garrett
Title: US Sales Director
Telephone: +1 213 807 9366
Cellular Phone: +1 309 706 0174
Email: brian.garrett@connexionz.com

Phase 1 (Base Project)

Vehicle hardware, Real-time predictions, GTFS feeds, public website, surveys, installation, application, and cloud dispatch software

Item	Description	#	Unit Cost USD	Total USD	Notes
1	**PROJECT MANAGEMENT, SYSTEM CONFIGURATION AND SURVEYS**				
1A	Project Management Hours - Per Hour	200	55.00	11,000.00	Weekly Project Meetings and detailed processes for issue management, risk management, and quality assurance
1B	Vehicle Survey - Lump Sum	1	4,875.00	4,875.00	Survey of all stops and all vehicle types, ensures a smooth install 1 full week
1C	Route, Stop, and Schedule Initial Configuration - Lump Sum	1	2,080.00	2,080.00	Our team sets up the route, schedule, and stop system from end-to-end later, we train you on how we did it
1D	Discovery Meeting	1	4,875.00	4,875.00	Initial project meeting meant to set acceptance criterion, schedules, and discuss system design
1E	System and Vehicle Design	170	60.00	10,200.00	Thorough Vehicle Design and System Documentation
1	*TOTAL*			*33,030.00*	
2	**HARDWARE**				
2A	Connexionz K86 Android Tablet	35	900.00	31,500.00	IP65 commercial grade android tablet. Includes lockable bracket and RAM mount. Powered by ignition. Connected Directly to modem.
2B	Connexionz Medius Onboard Integration device and AVAS	35	2,300.00	80,500.00	Includes plug and play I/O for future integrations. The Medius is single onboard computing device and connected directly to speaker system for AVAS. Includes integration to existing modem.
2C	Pepwave BR1 Modem	35	600.00	21,000.00	Modem, can be used for future growth/connectivity

Item	Description	#	Unit Cost USD	Total USD	Notes
2D	Internal LED Sign and cable - Hanover	35	900.00	31,500.00	Internal next-stop sign from Hanover
2E	Vehicle cabling for power, speakers, and communication	35	150.00	5,250.00	Vehicle cabling for power, speakers, and communication
2	*TOTAL*			*169,750.00*	
3	**INSTALLATION**				
3A	Vehicle Installation - Per Vehicle	35	896.00	31,360.00	Onsite Installation with Connexionz employed field techs
3B	Travel Costs - Per Person	2	14,600.00	29,200.00	2 Install techs, 2 trips, 40 total days, including final testing
3C	Headsign integration	35	100.00	3,500.00	Includes J1708 cable and link to J1708 compliant OCU for Luminator, Twinvision, and Hanover
3	*TOTAL*			*64,060.00*	
4	**SOFTWARE**				
4A	TransitManager Software package - Includes: Connexionz Dispatch, Route Planner, Analysis, and Media Manager	1	20,000.00	20,000.00	Cloud Hosted - Microsoft Azure - 10 users
4B	Connexionz Operator Tablet Software - Per tablet	35	200.00	7,000.00	Lifetime license for all purchased tablets. CNX MDT Includes: Trip Screen Real-time Load Route map, trip turns Messaging Log-In
4	*TOTAL*			*27,000.00*	
5	**REAL TIME PASSENGER INFORMATION**				
5A	Passenger Public Website - Lump sum	1	5,000.00	5,000.00	Website includes real-time moving maps, e-mail-based subscription and alerts, service alerts, bus stop ID query tab, trip planning tab, ADA compliant text-only, and individual URL's for stop IDs
5B	White labeled "Ryde" apps for iOs and Android - Lump sum	1	5,000.00	5,000.00	Native application called "Racine Transit" or “Ryde” for both Android and iOs
5C	Data Feeds - GTFS, GTFS-RT, XML, 511, API's	1	0.00	0.00	Includes standard open feeds, GTFS, and availability for data feed for any available dataset by request.
5D	SMS System	1	10,000.00	10,000.00	1 local phone number and 200,000 texts in/out
5	*TOTAL*			*20,000.00*	

Item	Description	#	Unit Cost USD	Total USD	Notes
6	**TRAINING, HANDOVER, and SYSTEM MANUALS**				
6A	Onsite training (3 days) - Lump sum	1	5,000.00	5,000.00	Vehicle equipment, vehicle operators, CNX Route Planner, dispatch, and analysis. 2 days of scheduled training, 1 day as needed
6B	Manuals and documentation, Testing procedures, Project handover	1	1,903.00	1,903.00	Final meeting - handing project from project manager to service manager. Includes introduction and training for helpdesk and paper manuals
6	*TOTAL*			*6,903.00*	
TOTAL YEAR 1 COST - BASE PROJECT				**320,743.00**	

Item	Description	Total USD	Notes
Year 2	Annual maintenance, hosting, and support fee	30,000.00	Includes 2nd year hardware warranty, hosting, software updates, 24/7/365 support, for entire system
Year 3	Annual maintenance, hosting, and support fee	32,000.00	Includes, hosting, software updates, 24/7/365 support, for entire system
Year 4	Annual maintenance, hosting, and support fee	34,000.00	
Year 5	Annual maintenance, hosting, and support fee	36,000.00	
TOTAL 5 YEAR COST - BASE PROJECT		**452,743.00**	
Year 6	Annual maintenance, hosting, and support fee	38,000.00	
Year 7	Annual maintenance, hosting, and support fee	40,000.00	
Year 8	Annual maintenance, hosting, and support fee	42,000.00	
Year 9	Annual maintenance, hosting, and support fee	44,000.00	
Year 10	Annual maintenance, hosting, and support fee	46,000.00	

Other Options

Item	Description	#	Unit Cost USD	Total USD	Notes
	SIGNAGE OPTIONS				
1	Integration with existing Transit Center LCD	1	1,500.00	1,500.00	Integration price for any existing LCD. Includes driver. Requires LAN or cellular data connection
2	Outdoor, 2-line LED, hardwired Wayside sign (Sunrise, CDP 20x144) Single Sided	1	4,500.00	4,500.00	Sunrise integrated wayside sign. Can be shelter, utility pole, or bus stop pole hung. Includes installation, but no travel. Direct powered, solar available on request.
3	Outdoor, 5-line LED, hardwired Wayside sign (Sunrise CDP 40x160) Single Sided	1	9,000.00	9,000.00	Sunrise integrated wayside sign. Can be shelter, utility pole, or bus stop pole hung. Includes installation, but no travel. Direct powered, solar available on request
4	Outdoor 55" LCD Sign - For transit centers - by Suntronic	1	9,000.00	9,000.00	Includes IP65 rated 55" LCD, sign driver, standard mounting, and installation, but not travel.
5	Outdoor 32" LCD Sign - For transit centers - by Suntronic	1	6,000.00	6,000.00	Includes IP65 rated 32" LCD, sign driver, standard mounting, and installation, but not travel.

Standard Conditions

1. Local and federal taxes not included.
2. Shipping/freight is not included
3. Travel costs – If proposed travel and accommodation needs to be re-scoped due to changes in customer requirements Connexionz would be required to re-price travel.

REQUIRED FORMS

Attachment A – References

Attachment B - Designation of Confidential, Trade Secrete & Proprietary Information

Attachment C – Insurance / Indemnification Requirements

Attachment D – Federally Required Clauses

Attachment E

Governmentwide Debarment and Suspension (non-Procurement) Bidder's Certification

Federal Certifications – Certification and Restrictions on Lobbying

Buy America Certification

ATTACHMENT A – REFERENCES

VENDOR NAME: Connexionz Limited

Provide a minimum of four (4) references, with at least three (3) municipal transit department customers of similar stature to the Racine Transit. Provide company name, address, contact person, telephone number, and appropriate information on the product(s) and/or service(s) used for three (3) or more installations/services with requirements similar to those included in this solicitation document. If Vendor is proposing any arrangement involving a third party, the named references should also be involved in a similar arrangement. The City may make such investigation as is necessary to determine the ability of the Vendor to fulfill service requirements.

1. Company Name:	Tri Delta Transit
Address:	801 Wilbur Avenue, Antioch, CA
Telephone:	(925) 754 6622
Contact Person:	Steve Ponte - Executive Director
E-mail address:	sponte@accta.org
Product(s) and/or Service(s) Used:	refer attached
How long have you been working with this company?	11 years

2. Company Name:	City of Pasadena Transit
Address:	100N. Garfield Avenue, Pasadena, CA 91109
Telephone:	(626) 744 7452
Contact Person:	Valerie Gibson, Transit Manager
E-mail address:	vgibson@cityofpasadena.net
Product(s) and/or Service(s) Used:	refer attached
How long have you been working with this company?	8 years

3. Company Name:	Golden Empire Transit
Address:	1830 Golden State Avenue, Bakersfield, CA93301
Telephone:	(661) 869 6358
Contact Person:	Robert Williams
E-mail address:	rwilliams@getbus.org
Product(s) and/or Service(s) Used:	refer attached
How long have you been working with this company?	8 years

4. Company Name:	Stanislaus Regional Transit
Address:	1010 10th St Suite 4204, Modesto, CA 95354
Telephone:	(925) 786 1875
Contact Person:	Robin Cody
E-mail address:	RCody@outlook.com
Product(s) and/or Service(s) Used:	Refer attached
How long have you been working with this company?	1 year

ATTACHMENT B – DESIGNATION OF CONFIDENTIAL, TRADE SECRET & PROPRIETARY INFORMATION

Material submitted in response to the City of Racine's (the "City") Request for Proposal includes at least one formula, pattern, compilation, program, device, method, technique or process that derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use and is the subject of reasonable efforts to maintain its secrecy. Such information qualifies as a trade secret, as provided in Wis. Stat. § 19.36(5). As such, the proposer asks that the trade secrets contained on certain pages of this proposal, as indicated below, be treated as confidential material and not be released to the public. I am providing the following information with the understanding that it is being submitted to the City under a pledge of confidentiality. I would not have submitted this information had the City not pledged to keep it confidential* and request that the following pages not be released:

Section	Page	Topic

*NOTE: Proposers are cautioned that the **ENTIRE PROPOSAL MAY NOT FALL WITHIN THE CONFINES OF THE PLEDGE OF CONFIDENTIALITY. THE ABOVE DESIGNATION(S) OF CONFIDENTIALITY IN NO WAY GUARANTEES THAT DESIGNATED INFORMATION WILL BE KEPT CONFIDENTIAL. UNDER THE PROVISION OF THE PUBLIC RECORDS LAW, PROPOSER IS NOT ENTITLED TO NOTIFICATION PRIOR TO RELEASE OF INFORMATION, AND IS NOT ENTITLED TO GO TO COURT TO BLOCK DISCLOSURE OF ANY PORTION OF THE PROPOSAL.**

IF THE CITY AGREES WITH PROPOSER'S DESIGNATION OF TRADE SECRET OR CONFIDENTIALITY AND THE DESIGNATION IS CHALLENGED, THE UNDERSIGNED HEREBY AGREES TO PROVIDE LEGAL COUNSEL OR OTHER NECESSARY ASSISTANCE TO DEFEND THE DESIGNATION OF TRADE SECRET OR CONFIDENTIALITY.

Failure to include this designation in the proposal response may mean that all information provided as part of the proposal response will be open to examination and copying.

Signature (Authorized Representative)	Telephone Number	E-mail
Brian Garrett	(309) 706 0174	brian.garrett@connexionz.com

Name (Please Print)	Company Name
Brian Garrett	Connexionz Limited

Title	Date
US Sales Director	November 30th, 2020

NOTE: The City as custodian of these public records has the obligation, pursuant to the Public Records Law, to determine whether the above information can be kept confidential.

PROPRIETARY INFORMATION: A proposer responding to this proposal should not include any proprietary information or protected trade secret(s) as part of its proposal unless the proposer 1) designates the specific information that it maintains is proprietary or trade secret and the reason(s) for such designation in a separate document, and 2) identifies the specific information when it occurs within the proposal.

The City's preference is for the proposer to segregate all information designated as confidential into one section of the Request for Proposal and/or a separate document for easier removal to maintain its confidential status. The response to the proposal should indicate which portion of the requested information is confidential and where this information is located within the response, i.e. under separate cover, in confidential Section No. _____, etc. Data contained in the proposal and all documentation become property of the City.

ATTACHMENT C – INSURANCE/INDEMNIFICATION REQUIREMENTS

Indemnification

To the fullest extent allowable by law, Contractor hereby indemnifies and shall defend and hold harmless the City of Racine, its elected and appointed officials, officers, employees or authorized representatives or volunteers and each of them from and against any and all suits, actions, legal or administrative proceedings, claims, demands, damages, liabilities, interest, attorneys' fees, costs, and expenses of whatsoever kind or nature whether arising before, during, or after completion of the work hereunder and in any manner directly or indirectly caused, occasioned, or contributed to in whole or in part or claimed to be caused, occasioned, or contributed to in whole or in part, by reason of any act, omission, fault, or negligence, whether active or passive, of Contractor or of anyone acting under its direction or control or on its behalf in connection with or incident to the performance of this Agreement regardless if liability without fault is sought to be imposed on the City of Racine, Contractor's aforesaid indemnity and hold harmless agreement shall not be applicable to any liability caused by the sole fault, sole negligence, or willful misconduct of the City of Racine, or its elected and appointed officials, officers, employees or authorized representatives or volunteers. This indemnity provision shall survive the termination or expiration of this Agreement.

In any and all claims against the City of Racine, its elected and appointed officials, officers, employees or authorized representatives or volunteers by an employee of Contractor, any subcontractor, or anyone for whose acts any of them may be liable, the indemnification obligation under this paragraph shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any subcontractor under Worker's Compensation Acts, Disability Benefit Acts, or other employee benefit acts.

No provision of this Indemnification clause shall give rise to any duties not otherwise provided for by this Agreement or by operation of law. No provision of this Indemnity clause shall be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity that would otherwise exist as to the City of Racine, its elected and appointed officials, officers, employees or authorized representatives or volunteers under this or any other contract. This clause is to be read in conjunction with all other indemnity provisions contained in this Agreement. Any conflict or ambiguity arising between any indemnity provisions in this Agreement shall be construed in favor of indemnified parties except when such interpretation would violate the laws of the state in which the job site is located. Contractor shall reimburse the City of Racine, its elected and appointed officials, officers, employees or authorized representatives or volunteers for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided. Contractor's obligation to indemnify shall not be restricted to insurance proceeds, if any, received by the City of Racine, its elected and appointed officials, officers, employees or authorized representatives or volunteers.

Insurance Requirements

The Contractor shall not commence work under a contract until he has obtained all insurance required under this paragraph and has filed certificates thereof with the Owner, nor shall the Contractor allow a Subcontractor to commence work until all similar insurance required has

been so obtained and filed with the Contractor. Unless otherwise specified in this Agreement, the Contractor shall, at its sole expense, maintain in effect at all times during the performance of the Work, insurance coverage with limits not less than those set forth below with insurers and under forms of policies set forth below.

Worker's Compensation and Employers Liability Insurance - The Contractor shall cover or insure under the applicable labor laws relating to worker's compensation insurance, all of their employees in accordance with the law in the State of Wisconsin. The Contractor shall provide statutory coverage for work related injuries and employer's liability insurance with limits of $1,000,000 each accident, $1,000,000 disease policy limit, and $1,000,000 disease each employee.

Commercial General Liability and Automobile Liability Insurance - The Contractor shall provide and maintain the following commercial general liability and automobile liability insurance:

Coverage – Coverage for commercial general liability and automobile liability insurance shall be at least as broad as the following:

1. Insurance Services Office (ISO) Commercial General Liability Coverage (Occurrence Form CG0001)

2. Insurance Services Office (ISO) Business Auto Coverage (Form CA0001), covering Symbol 1 (any vehicle)

Limits -The Contractor shall maintain limits no less than the following:

1. General Liability - One million dollars ($1,000,000) per occurrence ($2,000,000 general aggregate if applicable) for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to the project/location (with the ISO CG 2503, or ISO CG 2504, or insurer's equivalent endorsement provided to the City of Racine) or the general aggregate including product-completed operations aggregate limit shall be twice the required occurrence limit.

2. Automobile Liability- One million dollars ($1,000,000) for bodily injury and property damage per occurrence limit covering all vehicles to be used in relationship to the Agreement.

3. Umbrella Liability- One Million dollars ($1,000,000) for bodily injury, personal injury and property damage per occurrence in excess of coverage carried for Employers' Liability, Commercial General Liability and Automobile Liability as described above.

Required Provisions - The general liability and automobile liability policies are to contain, or be endorsed to contain, the following provisions:

1. The City of Racine, its elected and appointed officials, officers, employees or authorized representatives or volunteers are to be given additional insured status as respects liability arising out of activities performed by or on behalf of the Contractor; on products and

completed operations of the Contractor; for premises occupied or used by the Contractor; and on any vehicles owned, leased, hired or borrowed by the Contractor.

2. The coverage shall contain no special limitations on the scope of protection afforded to the City of Racine, its elected and appointed officials, officers, employees or authorized representatives or volunteers.

3. For any claims related to this project, the Contractor's insurance shall be primary insurance as respects the City of Racine, its elected and appointed officials, officers, employees or authorized representatives or volunteers. Any insurance, self-insurance, or other coverage maintained by the City of Racine, its elected and appointed officials, officers, employees, or authorized representatives or volunteers shall not contribute to it.

4. Any failure to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to the City of Racine, its elected and appointed officials, officers, employees or authorized representatives or volunteers.

5. The Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

6. Each insurance policy required by this agreement shall state, or be endorsed to state, that coverage shall not be canceled by the insurance carrier or the Contractor, except after sixty (60) days (or 10 days for non-payment of premium) prior written notice by U.S. mail has been given to the City of Racine.

7. Such liability insurance shall indemnify the City of Racine, its elected and appointed officials, officers, employees or authorized representatives or volunteers against loss from liability imposed by law upon, or assumed under contract by, the Contractor for damages on account of such bodily injury (including death), property damage, personal injury, completed operations, and products liability.

8. The general liability policy shall cover bodily injury and property damage liability, owned and non-owned equipment, blanket contractual liability, completed operations liability with a minimum of a 24 month policy extension, explosion, collapse, underground excavation, and removal of lateral support, and shall not contain an exclusion for what is commonly referred to by the insurers as the "XCU" hazards. The automobile liability policy shall cover all owned, non-owned, and hired vehicles. All of the insurance shall be provided on policy forms and through companies satisfactory to the City of Racine, and shall have a minimum A.M. Best's rating of A-VII.

Deductibles and Self-Insured Retentions - Any deductible or self-insured retention must be declared to and approved by the City of Racine. At the option of the City of Racine, the insurer shall either reduce or eliminate such deductibles or self-insured retentions.

Evidences of Insurance - Prior to execution of the agreement, the Contractor shall file with the City of Racine a certificate of insurance (Acord Form 25-S or equivalent) signed by the insurer's representative evidencing the coverage required by this agreement. Such evidence shall include an additional insured endorsement signed by the insurer's representative. Such

evidence shall also include confirmation that coverage includes or has been modified to include all required provisions 1-8.

Responsibility for Work - Until the completion and final acceptance by the City of Racine of all the work under and implied by this agreement, the work shall be under the Contractor's responsibility care and control. The Contractor shall rebuild, repair, restore and make good all injuries, damages, re-erections, and repairs occasioned or rendered necessary by causes of any nature whatsoever.

Sub-Contractors - In the event that the Contractor employs other contractors (subcontractors) as part of the work covered by this agreement, it shall be the Contractor's responsibility to require and confirm that each sub-contractor meets the minimum insurance requirements specified above.

ATTACHMENT D – Federally Required Clauses

Federal Contract Clauses

The following clauses are included in all procurements and all contracts where federal funds are involved. The applicability of each clause is defined under the title. Vendors are required to sign certifications where applicable.

NO FEDERAL GOVERNMENT OBLIGATIONS TO THIRD PARTIES

Applicability: All contracts

In connection with the Project, the Recipient agrees that, absent the Federal Government's express written consent, the Federal Government shall not be subject to any obligations or liabilities to any subrecipient, lessee, third party contractor, or other participant at any tier of the Project, or other person or entity that is not a party to the Grant Agreement or Cooperative Agreement for the Project. Notwithstanding that the Federal Government may have concurred in or approved any solicitation, subagreement, lease, third party contract, or arrangement at any tier, the Federal Government has no obligations or liabilities to any entity other than the Recipient, including any subrecipient, lessee, third party contractor, or other participant at any tier of the Project.

FALSE OR FRAUDULENT STATEMENTS OR CLAIMS.

Applicability: All contracts

The Recipient acknowledges and agrees that:
(1) Civil Fraud. The Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. §§ 3801 et seq., and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to the Recipient's activities in connection with the Project. By executing the Grant Agreement or Cooperative Agreement for the Project, the Recipient certifies or affirms the truthfulness and accuracy of each statement it has made, it makes, or it may make in connection with the Project. In addition to other penalties that may apply, the Recipient also acknowledges that if it makes a false, fictitious, or fraudulent claim, statement, submission, certification, assurance, or representation to the Federal Government, the Federal Government reserves the right to impose on the Recipient the penalties of the Program Fraud Civil Remedies Act of 1986, as amended, to the extent the Federal Government deems appropriate.
(2) Criminal Fraud. If the Recipient makes a false, fictitious, or fraudulent claim, statement, submission, certification, assurance, or representation to the Federal Government or includes a false, fictitious, or fraudulent statement or representation in any agreement with the Federal Government in connection with a Project authorized under 49 U.S.C. chapter 53 or any other Federal law, the Federal Government reserves the right to impose on the Recipient the penalties of 49 U.S.C. § 5323(l), 18 U.S.C. § 1001, or other applicable Federal law to the extent the Federal Government deems appropriate. False or Fraudulent Statements or Claims. The Recipient acknowledges and agrees that:

CARGO PREFERENCE – USE OF UNITED STATES FLAG VESSELS

Applicability: ***All contracts where equipment, materials, or commodities may be transported by ocean vessels***

The contractor agrees: a) to use privately owned United States-Flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to the underlying contract to the extent such vessels are available at fair and reasonable rates for United States-Flag commercial vessels; b) to furnish within 20 working days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of-lading in English for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington DC 20590 and to the City of Racine; and c) to include these requirements in all subcontracts issued pursuant to this contract when the subcontract may involve the transport of equipment, material, or commodities by ocean vessel.

ENERGY CONSERVATION

Applicability: ***All contracts***

The contractor agrees to comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

ACCESS TO RECORDS AND REPORTS

Applicability: ***All contracts***

The following access to records requirements apply to this contract:

1. Where the purchaser is not a State but a local government and is the FTA recipient or a subgrantee of the FTA recipient in accordance with 49 C.F.R. 18.36(i), the contractor agrees to provide the purchaser, the FTA Administrator, the Comptroller General of the United States or any of their authorized representatives access to any books, documents, papers, and records of the contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts, and transcriptions. The contractor also agrees, pursuant to 49 C.F.R. 633.17 to provide the FTA Administrator or his authorized representatives including any PMO contractor access to contractor's records and construction sites pertaining to a major capital project, defined at 49 U.S.C. 5302(a)1, which is receiving federal financial assistance through the programs described at 49 U.S.C. 5307, 5309, or 5311.

2. Where any purchaser which is the FTA recipient or a subgrantee of the FTA recipient in accordance with 49 U.S.C. 5325(a) enters into a contract for a capital project or improvement (defined at 49 U.S.C. 5302(a)(1) through other than competitive bidding, the contractor shall make available records related to the contract to the purchaser, the Secretary of Transportation and the Comptroller General or any authorized officer or employee of any of them for the purposes of conducting an audit and inspection.

3. The contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

4. The contractor agrees to maintain all books, records, accounts, and reports required under this contract for a period of not less than three years after the date of termination or expiration of this contract, except in the event of litigation or settlement of claims arising from the performance of this contract, in which case contractor agrees to maintain same until the purchaser, the FTA Administrator, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims, or exceptions related thereto. Reference 49 CFR 18.39(i)(11).

5. FTA does not require the inclusion of these requirements in subcontracts.

FEDERAL CHANGES

Applicability: All Contracts

The Contractor shall at all times comply with all applicable FTA regulations, policies, procedures, and directives, including without limitation those listed directly or by reference in the Master Agreement between the City and the FTA, as they may be amended or promulgated from time to time during the term of this contract. Contractor's failure to so comply shall constitute a material breach of this contract.

TERMINATION

Applicability: All contracts in excess of $10,000

a. Termination for Convenience (All contracts)

The City may terminate this contract, in whole or in part, at any time by written notice to the contractor when it is in the Government's best interest. The contractor shall be paid its costs, including contract close-out costs, and profit on work performed up to the time of termination.

The contractor shall promptly submit its termination claim to the City to be paid to the contractor. If the contractor has any property in its possession belonging to the City, the contractor will account for the same, and dispose of it in the manner the City directs.

b. Termination for Default [Breach or Cause] (All contracts)

If the Contractor does not deliver supplies in accordance with the contract delivery schedule, or, if the contract is for services, the Contractor fails to perform in the manner called for in the contract, or if the Contractor fails to comply with any other provisions of the contract, the City may terminate this contract for default. Termination shall be effected by serving a notice of termination on the Contractor setting forth the manner in which the Contractor is in default. The Contractor will only be paid the contract price for supplies delivered and accepted, or services performed in accordance with the manner of performance set forth in the contract.

If it is later determined by the City that the Contractor had an excusable reason for not performing, such as a strike, fire, or flood, events which are not the fault of or any beyond the control of the Contractor, the City, after setting up a new delivery of performance schedule, may allow the Contractor to continue work, or treat the termination as a termination for convenience.

c. Opportunity to Cure (All contracts)

The City in its sole discretion may, in the case of a termination for breach or default, allow the Contractor an appropriately short period of time in which to cure the defect. In such case, the notice of termination will state the time period in which the cure is permitted and other appropriate conditions.

If Contractor fails to remedy to City's satisfaction the breach or default or any of the terms, covenants, or conditions of this Contract with ten (10) days after receipt by Contractor of written notice from the City setting forth the nature of said breach or default, the City shall have the right to terminate the Contract without any further obligation to the Contractor. Any such termination for default shall not in any way operate to preclude the City from also pursuing all available remedies against the Contractor and its sureties for said breach or default.

d. Waivers of Remedies for any Breach

In the event that the City elects to waive its remedies for any breach by the Contractor of any covenant, term, or condition of this Contract, such waiver by the City shall not limit the City's remedies for any succeeding breach of that or of any other term, covenant, or condition of this Contract.

e. Termination for Convenience (Professional or Transit Service Contracts)

The City, by written notice, may terminate this contract, in whole or in part, when it is in the Government's interest. If this contract is terminated, the City shall be liable only for payment under the payment provisions of this contract for services rendered before the effective date of termination.

f. Termination for Default (Supplies and Service)

If the contractor fails to deliver supplies or to perform the services within the time specified in this contract or any extension or if the contractor fails to comply with any other provisions of

this contract, the City may terminate this contract for default. The City shall terminate by delivering to the contractor a Notice of Termination specifying the nature of the default. The contractor will only be paid the contract price for supplies delivered and accepted, or services performed in accordance with the manner or performance set forth in this contract.

If, after termination for failure to fulfill contract obligations, it is determined that the contractor was not in default, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the City.

g. Termination for Default (Transportation Services)
If the contractor fails to pick up the commodities or to perform the services, including delivery services, within the time specified in this contract or any extension or if the contractor fails to comply with any other provisions of this contract, the City may terminate this contract for default. The City shall terminate by delivering to the contractor a Notice of Termination specifying the nature of default. The contractor will only be paid the contract price for services performed in accordance with the manner of performance set forth in this contract.

If this contract is terminated while the contractor has possession of goods belonging to the City, the contractor shall, upon direction of the City, protect and preserve the goods until surrendered to the City or its agent. The contractor and the City shall agree on payment for the preservation and protection of goods. Failure to agree on an amount will be resolved under the Dispute clause.

If, after termination for failure to fulfill contract obligations, it is determined that the contractor was not in default, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the City.

h. Termination for Default (Construction)
If the contractor refuses or fails to prosecute the work or any separable part, with the diligence that will insure its completion within the time specified in this contract or any extension or fails to complete the work within this time, or if the contractors fails to comply with any other provisions of this contract, the City may terminate this contract for default. The City shall terminate by delivering to the contractor a Notice of Termination specifying the nature of the default. In this event, the City may take over the work and complete it by contract or otherwise, and may take possession of and use any materials, appliances, and plant on the work site necessary for completing the work. The contractor and its sureties shall be liable for any damage to the City resulting from the contractor's refusal or failure to complete the work within the specified time, whether or not the contractor's right to proceed with the work is terminated. This liability includes any increased costs incurred by the City in completing the work.

The contractor's right to proceed shall not be terminated nor the contractor charged with damages under this clause if:
(1) the delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the contractor. Examples of such causes include: acts of God, acts of the City, acts of another contractor in the performance of a contract with the City, epidemics, quarantine restrictions, strikes, freight embargoes; and

(2) the contractor, within ten (10) days from the beginning of any delay, notifies the City in writing of the causes of delay. If in the judgment of the City, the delay is excusable, the time for completing the work shall be extended. The judgment of the City shall be final and conclusive on the parties, but subject to appeal under the Disputes clauses.

If, after termination of the contractor's right to proceed, it is determined that the contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the termination had been issued for the convenience of the City.

i. Termination for Convenience or Default (Architect and Engineering)

The City may terminate this contract in whole or in part, for the City's convenience or because of the failure of the contractor to fulfill the contract obligations. The City shall terminate by delivering to the contractor a Notice of Termination specifying the nature, extent, and effective date of the termination. Upon receipt of the notice, the contractor shall (1) immediately discontinue all services affected (unless the notice directs otherwise), and (2) deliver to the contracting officer all data, drawings, specifications, reports, estimates, summaries, and other information and materials accumulated in performing this contract, whether completed or in process.

If the termination is for convenience of the City, the Contracting Officer shall make an equitable adjustment in the contract price but shall allow no anticipated profit on unperformed services.

If the termination is for failure of the contractor to fulfill the contract obligations, the City may complete the work by contract or otherwise and the contractor shall be liable for any additional cost incurred by the City.

If, after termination for failure to fulfill contract obligations, it is determined that the contractor was not in default, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the City.

j. Termination for Convenience or Default (Cost-Type Contracts)

The City may terminate this contract, or any portion of it, by serving a notice of termination on the Contractor. The notice shall state whether the termination is for convenience of the City or for the default of the Contractor. If the termination is for default, the notice shall state the manner in which the Contractor has failed to perform the requirements of the contract. The Contractor shall account for any property in its possession paid for from funds received from the City, or property supplied to the Contractor by the City. If the termination is for default, the City may fix a fee, if the contract provides for a fee, to be paid the Contractor in proportion to the value, if any, of work performed up to the time of termination. The Contractor shall promptly submit its termination claim to the City and the parties shall negotiate the termination settlement to be paid the Contractor.

If the termination is for the convenience of the City, the Contractor shall be paid its contract close-out costs, and a fee, if the contract provided for payment of a fee, in proportion to the work performed up to the time of termination.

If, after serving a notice of termination for default, the City determines that the Contractor has an excusable reason for not performing, such as a strike, fire, flood, events which are not the

fault of and are beyond the control of the Contractor, the City, after setting up a new work schedule, may allow the Contractor to continue work, or treat the termination as a termination for convenience.

ATTACHMENT E: GOVERNMENT-WIDE DEBARMENT AND SUSPENSION (NONPROCUREMENT)

Applicability: Contracts and Subcontracts Over $25,000

1. **Definition:** Contractors are required to pass this requirement on to subcontractors seeking subcontracts over $25,000. Thus, the terms "lower tier covered participant" and "lower tier covered transaction" include both contractors and subcontractors and contracts and subcontracts over $25,000.

This contract is a covered transaction for purposes of 49 CFR Part 29. As such, the Contractor is required to verify that none of the Contractor, its principals, as defined at 49 CFR Part 29.995, or affiliates, as defined at 49 CFR Part 29.905m, are excluded or disqualified as defined at 49 CFR Parts 29.940 and 29.945.

The Contractor is required to comply with 49 CFR Part 29, Subpart C and must include the requirement to comply with 49 CFR Part 29, Subpart C in any lower tier covered transaction it enters into.

By signing and submitting its bid or proposal, the bidder or proposer certifies as follows:

The certification in this clause is a material representation of fact relied upon by the City of Racine. If it is later determined that the bidder or proposer knowingly rendered an erroneous certification, in addition to remedies available to the City, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or proposer agrees to comply with the requirements of 49 CFR Part 29, Subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

PRIVACY ACT

Applicability: Any contract involving a system of records on behalf of the Federal Government under any contract

The following requirements apply to the contractor and its employees that administer any system of records on behalf of the Federal Government under any contract:

(1) The contractor agrees to comply with, and assures the compliance of its employees with, the information restrictions and other applicable requirements of the Privacy Act of 1974, 5 U.S.C. § 552a. Among other things, the contractor agrees to obtain the express consent of the Federal Government before the contractor or its employees operate a system of records on behalf of the Federal Government. The contractor understands that the requirements of the Privacy Act, including the civil and criminal penalties for violation of that Act, apply to those individuals involved, and that failure to comply with the terms of the Privacy Act may result in termination of the underlying contract.
(2) The contractor also agrees to include these requirements in each subcontract to administer any system of records on behalf of the Federal Government financed in whole or in part with Federal assistance provided by the FTA.

CIVIL RIGHTS REQUIREMENTS

***Applicability:* All Contracts**

(1) Nondiscrimination

In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and federal transit law at 49 U.S.C. § 5332, the contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability. In addition, the contractor agrees to comply with applicable federal implementing regulations and other implementing requirements FTA may issue.

(2) Equal Employment Opportunity

The following equal employment opportunity requirements apply to the underlying contract:

(a) Race, Color, Creed, National Origin, Sex – In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, and federal transit laws at 49 U.S.C. § 5332, the contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (US DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. Parts 60 et seq., (which implement Executive Order No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e note), and with any applicable federal statutes, executive orders, regulations, and federal policies that may in the future affect construction activities undertaken in the course of the project. The contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, creed, national origin, sex, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the contractor agrees to comply with any implementing requirements FTA may issue.

(b) Age – In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. § § 623 and federal transit law at 49 U.S.C. § 5332, the contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the contractor agrees to comply with any implementing requirements FTA may issue.

(c) Disabilities – In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the contractor agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Part 1630, pertaining to employment of persons with disabilities. In addition, the contractor agrees to comply with any implementing requirements FTA may issue.

(3) Subcontracts

The contractor also agrees to include these requirements in each subcontract financed in whole or in part with federal assistance provided by the FTA, modified only is necessary to identify the affected parties.

DISADVANTAGED BUSINESS ENTERPRISE (DBE)

Applicability: All contracts

A. This contract is subject to the requirements of Title 49, Code of Federal Regulations, Part 26, *Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs.* The national goal for participation of Disadvantaged Business Enterprises (DBE) is 10%. The City's overall goal for DBE participation is 2.5%. A separate contract goal has not been established for this procurement.

B. The contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of this DOT-assisted contract. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the City deems appropriate. Each subcontract the contractor signs with a subcontractor must include the assurance in this paragraph (*see* 49 CFR Part 26.13(b)).

C. The successful bidder/offeror will be required to report its DBE participation obtained through race-neutral means throughout the period of performance.

D. The contractor is required to pay its subcontractors performing work related to this contract for satisfactory performance of this work no later than 30 days after the contractor's receipt of payment for that work for the City. In addition, the contractor is required to return any retainage payments to those subcontractors within 30 days after the subcontractor's work related to this contract is satisfactorily completed.

E. The contractor must promptly notify the City whenever a DBE subcontractor performing work related to this contract is terminated or fails to complete its work, and must make

good faith efforts to engage another DBE subcontractor to perform at least the same amount of work. The contractor may not terminate any DBE subcontractor and perform that work through its own forces or those of an affiliate without prior written consent of the City.

INCORPORATION OF FEDERAL TRANSIT ADMINISTRATION (FTA) TERMS

Applicability: ***All Contracts***

The preceding provisions include, in part, certain Standard Terms and Conditions required by the USDOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by the USDOT, as set forth in FTA Circular 4220.1E, are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Contract. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any City requests which would cause the City to be in violation of the FTA terms and conditions.

DRUG AND ALCOHOL TESTING

Applicability: All operational service contracts

The contractor agrees to establish and implement a drug and alcohol testing program that complies with 49 CFR Parts 653 and 654, produce any documentation necessary to establish its compliance with Parts 653 and 654, and permit any authorized representative of the United States Department of Transportation or its operating administrations, the State Oversight Agency of Wisconsin, or the City of Racine to inspect the facilities and records associated with the implementation of the drug and alcohol testing program as required under 49 CFR Parts 653 and 654 and review the testing process. The contractor agrees further to certify annually its compliance with Parts 653 and 654 before February 1st of each year and to submit the Management Information System (MIS) reports before February 15th of each year for the previous year to the City of Racine. To certify compliance the contractor shall use the "Substance Abuse Certifications" in the "Annual List of Certifications and Assurances for Federal Transit Administration Grants and Cooperative Agreements," which is published annually in the Federal Register. The Contractor agrees further to submit for review and approval to the City before February 1st of each year a copy of its Policy Statement developed to implement its drug and alcohol testing program. In addition, the contractor agrees to submit to the City for approval the selection of the certified laboratory, the substance abuse professional, the Medical Review Officer, and the use of any consortium.

END OF DETAILED SPECIFICATIONS

BIDDER'S CERTIFICATION

I hereby certify that all statements herein are made in behalf of:

Conexine Ltd.

Name of Corporation, Partnership or Person submitting bid

a corporation organized and existing under the laws of the State of:

California

a partnership consisting of: ~~_____~~

an ~~individual trading~~ as: ~~_____~~

of the City of Santa Clarita State of CA

that I have examined and carefully prepared this proposal from the plans and specifications and have checked the same in detail before submitting this proposal; that I have full authority to make such statements and submit this proposal in its (their) behalf, and that said statements are true and correct

SIGNATURE: [signature]

TITLE: U.S. Sales Director

Sworn and subscribed to before me

this 8th day of December 2020.

[signature]

(Notary or other officer authorized to administer oaths)

SEAL:

ARALI J MEDERO
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20174033494
MY COMMISSION EXPIRES AUGUST 17, 2021

My commission expires August 17, 2021

Federal Certifications

CERTIFICATION AND RESTRICTIONS ON LOBBYING

I, Brian Garrett, hereby certify
(Name and title of official)

On behalf of Connexionz Ltd. that:
(Name of Bidder/Company Name)

- No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.

- If any funds other than federal appropriated funds have been paid or will be paid to any person influencing or attempting to influence an officer or employee of any agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with the federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form – LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

- The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including sub-contracts, subgrants and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The undersigned certifies or affirms the truthfulness and accuracy of the contents of the statements submitted on or with this certification and understands that the provisions of 31 U.S.C. Section 3801, et seq., are applicable thereto.

Name of Bidder/Company Name Connexionz Ltd.

Type or print name Brian Garrett

Signature of authorized representative _____ Date 12/8/2020

Signature of notary and SEAL _____

ARALI J MEDERO
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20174033494
MY COMMISSION EXPIRES AUGUST 17, 2021

GOVERNMENT-WIDE DEBARMENT AND SUSPENSION (NONPROCUREMENT)

49 CFR Part 29, Executive Orders 12549, 12689, and 31 U.S.C.6101 (Contracts over $25,000)

Background and Applicability

In conjunction with the Office of Management and Budget and other affected Federal agencies, DOT published an update to 49 CFR Part 29 on November 26, 2003. This government-wide regulation implements Executive Order 12549, Debarment and Suspension, Executive Order 12689, Debarment and Suspension, and 31 U.S.C. 6101 note (Section 2455, Public Law 103-355, 108 Stat. 3327). The provisions of Part 29 apply to all grantee contracts and subcontracts at any level expected to equal or exceed $25,000 as well as any contract or subcontract (at any level) for Federally required auditing services. 49 CFR 29.220(b). This represents a change from prior practice in that the dollar threshold for application of these rules has been lowered from $100,000 to $25,000. These are contracts and subcontracts referred to in the regulation as “covered transactions.”

Grantees, contractors, and subcontractors (at any level) that enter into covered transactions are required to verify that the entity (as well as its principals and affiliates) they propose to contract or subcontract with is not excluded or disqualified. They do this by (a) Checking the Excluded Parties List System, (b) Collecting a certification from that person, or (c) Adding a clause or condition to the contract or subcontract. This represents a change from prior practice in that certification is still acceptable but is no longer required. 49 CFR 29.300.

Grantees, contractors, and subcontractors who enter into covered transactions also must require the entities they contract with to comply with 49 CFR 29, subpart C and include this requirement in their own subsequent covered transactions (i.e., the requirement flows down to subcontracts at all levels). Instructions for Certification: By signing and submitting this bid or proposal, the prospective lower tier participant is providing the signed certification set out below.

Suspension and Debarment

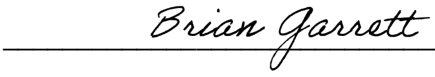
This contract is a covered transaction for purposes of 49 CFR Part 29. As such, the contractor is required to verify that none of the contractor, its principals, as defined at 49 CFR 29.995, or affiliates, as defined at 49 CFR 29.905, are excluded or disqualified as defined at 49 CFR 29.940 and 29.945.

The contractor is required to comply with 49 CFR 29, Subpart C and must include the requirement to comply with 49 CFR 29, Subpart C in any lower tier covered transaction it enters into.

By signing and submitting its bid or proposal, the bidder or proposer certifies as follows:

The certification in this clause is a material representation of fact relied upon by the recipient. If it is later determined that the bidder or proposer knowingly rendered an erroneous certification, in addition to remedies available to the recipient, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or proposer agrees to comply with the requirements of 49 CFR 29, Subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

Contractor: Connexionz (CNX)

Signature of Authorized Official  Date 12 / 09 / 2020

Name and Title of Contractor's Authorized Official: Brian Garrett / US Sales Director

BUY AMERICA CERTIFICATION
(STEEL OR MANUFACTURED PRODUCTS)
[61 FR 6302, Feb. 16, 1996, as amended at 74 FR 30239, June 25, 2009]

General Requirement (as stated in 49 CFR 661.5)

(a) Except as provided in 49 CFR 661.7 and 49 CFR 661.11, no funds may be obligated by FTA for a grantee project unless all iron, steel, and manufactured products used in the project are produced in the United States.

(b) All steel and iron manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.

(c) The steel and iron requirements apply to all construction materials made primarily of steel or iron and used in infrastructure projects such as, transit or maintenance facilities, rail lines, and bridges. These items include, but are not limited to, structural steel or iron, steel or iron beams and columns, running rail and contact rail. These requirements do not apply to steel or iron used as components or subcomponents of other manufactured products or rolling stock, or to bimetallic power rail incorporating steel or iron components.

(d) For a manufactured product to be considered produced in the United States:

(1) All of the manufacturing processes for the product must take place in the United States; and

(2) All of the components of the product must be of U.S. origin. A component is considered of U.S. origin if it is manufactured in the United States, regardless of the origin of its subcomponents.

If steel, iron, or manufactured products (as defined in 49 CFR 661.3 and 661.5) are being procured, the appropriate certificate as set forth below shall be completed and submitted by each bidder or offeror in accordance with the requirement contained in 49 CFR 661.13(b).

Certificate of **Compliance** with Buy America Requirements.
The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(1), and the applicable regulations in 49 CFR part 661.

Company Connexionz Limited

Name Brian Garrett Title US Sales Director

Signature Brian Garrett Date 12/09/2020

Certificate of **Non-Compliance** with Buy America Steel or Manufactured Products Requirements The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j), but it may qualify for an exception to the requirement pursuant to 49 U.S.C. 5323(j)(2), as amended, and the applicable regulations in 49 C.F.R. 661.7.

Company_____

Name_____ Title_____

Signature_____ Date_____

COVID-19 Work Safe Plan

Contents

1 Introduction

1.1 Purpose

The purpose of this document is to outline Connexionz' plan to address and manage the specific health risks that COVID-19 poses to communities. By implementing the measures outlined herein, Connexionz will ensure to the best of our ability that those undertaking work on behalf of Connexionz (including employees, contractors and subcontractors) reduce their potential of catching or spreading COVID-19 so far as is practical, at all times complying with local health and safety guidelines and mandates.

1.2 COVID-19 background, symptoms, characteristics

COVID-19 (short for Coronavirus Disease 2019) is the infectious respiratory illness caused by the recently discovered coronavirus, SARS-CoV-2. This new virus and disease were first identified in Wuhan, China, in December 2019. COVID-19 has become a global pandemic.

COVID-19 symptoms range from mild to severe and, in some cases, the disease can be fatal. The most common symptoms include fever, cough, and shortness of breath.

According to health authorities, symptoms of COVID-19 may appear in as few as 2 days or as long as 14 days after exposure.

COVID-19 is highly contagious, spreading most commonly through respiratory droplets between people who are in close contact with (i.e. within 6 feet of) one another.

Older people and those with existing conditions such as heart or lung disease or diabetes are at higher risk of developing more serious complications and potentially dying from COVID-19.

The most important risk mitigation strategies to reduce the spread of COVID-19 include:

1. Physical distancing; including remaining at least 6 feet from other people at all times; isolating yourself from others (i.e. staying home) if you are unwell or if you are a close contact of someone who has tested positive for COVID-19, wearing a face covering such as a mask when in public
2. Personal hygiene; including frequent handwashing, use of hand sanitiser if handwashing is not easily achieved, observing good cough and sneeze etiquette
3. More frequent cleaning & disinfecting of high-touch surfaces like door handles and light switches.

1.3 Connexionz health & safety controls

The controls that Connexionz has put in place are related to the following categories:

1. People (e.g. symptoms, personal hygiene, guidance)
2. Operations (most importantly enabling social distancing)
3. Hygiene provisions (e.g. products for handwashing, cleaning/disinfecting protocols, and face coverings)

2 Health & Safety controls: People

This section outlines the health and safety controls relating to our people – employees, contractors and subcontractors undertaking work on behalf of Connexionz.

2.1 Golden rule for Connexionz people – stay home if you are unwell

It is vital that those completing work on Connexionz behalf (including employees, contractors, subcontractors) who are unwell or suffering symptoms consistent with COVID-19 do not come into contact with other workers or those in the wider community while undertaking work for Connexionz.

In addition, if a Connexionz worker shares a residence with, or is confirmed as close contact of someone who has tested positive for COVID-19, they must also stay home for 14 days.

Connexionz workers are expected to self-monitor for symptoms at home each day, and stay home if they are experiencing any of the following symptoms:

- fever (100°F and above) or chills
- a new or worsening cough
- shortness of breath
- sore throat
- runny nose/congestion
- changes to or recent loss of smell and/or taste
- fatigue
- headache or muscle/body aches
- nausea, vomiting or diarrhea

People with symptoms should follow our normal sick leave procedure to notify us as soon as possible and work from home if symptoms are mild and any of your duties can be effectively carried out this way. We also encourage people experiencing these symptoms to seek medical advice and receive a test for COVID-19 if so advised.

If workers have these COVID-like symptoms, they should not return to work until they have been either:

1. symptom-free for at least 48 hours, no less than 14 days after the first onset of symptoms; or
2. are both symptom-free and have been tested for COVID-19, returning a negative result.

2.2 Sick Leave

The Families First Coronavirus Response Act (FFCRA) provides for 14 days paid sick leave for COVID-19-related time off. Where these paid sick days have been used up, individuals are to discuss alternative paid or unpaid time off options with their line manager. See this page for further information about the FFCRA.

2.3 Personal hygiene measures

Connexionz workers will observe sound personal hygiene practices in order to help keep themselves and others safe, including:

- Frequently washing hands for at least 20 seconds using soap and water and drying them completely, especially after coughing, sneezing, or touching surfaces used by members of the public
- Using hand sanitiser containing at least 60% alcohol where handwashing is not easily achieved
- Avoid touching eyes, nose and mouth
- Wearing a face covering or mask, which Connexionz can provide if necessary. Using and wearing the face covering appropriately (e.g. not touching it or sharing it).
- Observing good cough and sneeze etiquette i.e. coughing/sneezing into elbow or into a tissue, throwing it away immediately, and then washing hands

2.4 Guidelines and communication/ training

We will provide information and notices to Connexionz people such as this document, and regularly check in with our people verbally (whether in-person or over video or telephone calls) to ensure:

1. they understand the risks and symptoms of COVID-19
2. that any individual circumstances are addressed (e.g. any increased protections for those with pre-existing conditions that are associated with higher risk of serious complications due to COVID-19)
3. that key mitigation strategies are understood and consistently observed
4. that any relevant updates or new information is promptly and efficiently disseminated

3 Health & Safety controls: Operations

The key control that affects operations is ensuring physical distancing between people as much as possible.

3.1 Working from home encouraged where possible

Connexionz encourages people to work from home where they can largely complete their duties in this setting. We will attempt to accommodate any reasonable request to borrow equipment required to facilitate working from home to ensure a productive and safe work environment.

3.2 Working in the Connexionz office, Santa Clarita

Workers who are unable to work from home may work from the office.

- Individuals will use a single workstation to reduce communal-touch surfaces
- Additional equipment may be procured using the usual approvals process to ensure it is only used by one person
- Sign-in sheets for visitors will be maintained to assist contact tracing efforts

- Staggered working hours and breaks are encouraged wherever possible to reduce the amount that people may come into close contact with each other
- Workstations will be moved around to facilitate at least 6 feet of physical separation between people
- Avoid sharing tools or equipment. If this is unavoidable, clean it thoroughly between users.
- Shared cups, cutlery and dishes to be cleaned in the dishwasher after use
- Workers are encouraged to bring their own cup, cutlery and dishes to minimise communal use
- All rubbish to be put straight in the bin

Connexionz will ensure there are adequate provisions to maintain physical distancing and hygiene in the office – see chapter on Health & Safety controls: Hygiene.

3.3 Working on customer sites/ Field work

Where field work and/or site/ customer meetings are necessary:

- A site-specific safety plan will be written for work sites (see example in the appendix), which will include COVID-19 safety considerations and procedures
- Ensure appropriate cleaning products and personal protective equipment (PPE) is on hand
- Ensure all required stock and tools to complete field work tasks are available before going onsite
- Maintain the 6 feet physical distancing rule when onsite to the greatest extent possible
- Wear a mask for the duration of the visit
- Clean all working surfaces and equipment before and after use
- Avoid using any other contractor's or customer's equipment unless it has been thoroughly cleaned e.g. ladders, hand tools

3.4 Travel to/between worksites

- Avoid car-pooling if practical
- If 2 or more people do have to travel together, keep the vehicle well ventilated. Face masks should be worn as a control measure
- Only the driver of the vehicle should adjust the vehicle's instruments (e.g. radio, AC, windows)
- Avoid non-essential stops
- Keep vehicles in a state of good repair to avoid any unnecessary stops or breakdowns that might require outside assistance
- Clean and sanitize the vehicle's instruments, door handles, sun visors, etc. on a regular basis

4 Health & Safety controls: Hygiene

Connexionz will provide equipment and resources to ensure the highest practicable hygiene standards for people working for us.

We will provide:

- Hand sanitizer, disposable wipes and disposable gloves as requested
- Liquid soap, hand sanitiser and disposable paper towels in communal areas and bathrooms
- Cloth face coverings if required

The team in the Santa Clarita office will take responsibility for their workspace, allocating tasks between themselves appropriately in order to ensure:

- Twice-daily cleaning of communal touch surfaces (especially door handles, kitchen and bathroom surfaces) and equipment in the office
- Stocks of cleaning and sanitizing products are adequate and regularly replenished

4.1 Office Visitors & Deliveries

Avoid inviting visitors to the office if possible. If a visitor to the office is deemed essential, the Connexionz person they are meeting will need to ensure the visitor:

- Has monitored their own health and declared themselves free of any common COVID-19 symptoms
- Signs in
- Understands Connexionz health and safety guidelines (i.e. this plan)
- Does not display any visible signs of illness. If a Connexionz team member thinks the visitor may be unwell or displaying COVID-19 symptoms, they should respectfully ask the visitor to leave the office immediately

Deliveries will only be accepted from official couriers and will be received by one designated person.

1 Appendix One: Checklist

PEOPLE	
☐	Connexionz workers have access to a copy of this document
☐	Signage has been posted around the office to ensure people are aware of their rights and responsibilities in reducing the spread of COVID-19
☐	People will stay home if they are unwell, understanding their right to paid sick leave
☐	Workers are familiar with the common symptoms of COVID-19, and have spoken privately to their line managers about any personal concerns (e.g. heightened risk profile)
☐	Workers have reviewed their own duties and equipment needs, and have established whether and how much they will be able to work from home
☐	People maintain physical distancing of at least 6 feet between each other to the greatest extent possible
☐	People maintain personal hygiene to the highest standards possible, including through frequent handwashing, using hand sanitizer, good cough & sneeze etiquette and wearing face coverings.
OPERATIONS	
☐	Office layout and work schedules facilitate physical distancing of at least 6 feet between people to the greatest extent possible
☐	Those working in the field have documented the health and safety requirements for working on a given site through a site-specific safety plan, which includes any requirements particular to the site
☐	Field workers know what equipment they will need when working on a given job and have ensured they have access to the equipment in such a way as to maximise hygiene and minimise contact with others
☐	Field workers plan their travel to worksites, ensuring safest practical options are utilised
HYGIENE	
☐	There are adequate and frequently re-stocked supplies of cleaning & hygienic products including handwash/ soap, hand sanitizer, antibacterial/disinfectant wipes, surface cleaners/ disinfectants and cleaning cloths, dishwashing products.
☐	People have and wear face coverings, and Connexionz has provided these as required
☐	High-touch areas on Connexionz worksites such as office door handles are cleaned twice a day
☐	Visitors adhere to our health and safety requirements including not visiting if they are unwell, signing in.
☐	One person has the responsibility for accepting deliveries from official couriers

2 Appendix Two: Sample Site-Specific Safety Plan – COVID-19

TASK ANALYSIS WORKSHEET			
PPE Required:	Face covering, Protective Clothing/Uniform, Hi Visibility, Boots	**Task Analysis Completed By:**	***Name, Role Title***
PROJECT/SITE:		**DATE:**	
Plant Required:	PPE to be used at all times	**SPECIAL CONSIDERATION TO REDUCING THE SPREAD OF COVID-19**	
Signage Required	At all times to be used		
Commencement Date:		**Due Date Completion:**	

PRE-START		
TASK/ STEP	**RISK**	**CONTROLS**
Tasks/ steps of the onsite work listed including nature of tasks	**Risks involved with each task/ step. Focus on what can cause harm and what can go wrong**	**Control method/ Protocols required to ELIMINATE, ISOLATE or MINIMISE each risk**
Pre-Start	**Appropriate provision of Information & Supervision**	• Induction from Site Representative • Supervision, inspections • Person in Control Identified • Emergency Procedures • Training
	COVID-19	• Face coverings to be worn • 6 feet distance between worker and other people to be maintained to the greatest extent possible (site assessment provided by site owner/ manager) • Cleaning and hygiene equipment on hand

GENERAL		
TASK/ STEP	**RISK**	**CONTROLS**
Persons Entering Site	**Site procedures/ emergency management**	• Report to main office, sign in the contractor visitor's log with name/date, reason for entry and exit time.
Site assessment	**Falls and potential for injury**	• Warning signs in place, No Unauthorised Entry • Rubbish removed regularly • Delivery of products and materials, designated area • Designated storage area Safe work areas, and path movement areas • PPE at all times • Secure objects
Using site facilities	**Hygiene**	• Facilities kept clean and tidy • Rubbish Bin with lid • Running water
Ventilation	**Respiratory complications or illness**	• Sufficient fresh air • Adequate means of extraction of contaminated air/ steam/ dust
Personnel assessment	**Injury / Illness / Pre-existing conditions**	• Ensure first aid kit is kept accessible • Ensure kit is stocked and maintained • Ensure personnel are informed of Current Certified first Aiders
Working alone	**Injury /Illness**	• Communicate to Environment's Site Representative • Lone worker has cell phone
Outdoor work	**Inclement weather/ other suitable environmental conditions**	• Do not start task until safe to do so

WORKING AT HEIGHTS – USING LADDERS, SCAFFOLD AND EDGE PROTECTION		
TASK/ STEP	**RISK**	**CONTROLS**
Ladders	**Falls**	• Ladders checked to ensure not loose or missing rungs • Ensure ladder properly placed ie 4:1 • Ladder to be restrained at the top • Ladder footed at base • Meets NZS standards AS/NZS 1892.1 • Ensure ladder is placed on flat level surface • Top of Ladder to extend 1.0 metres above working platform • Step ladders to have rigid locking bars in place
Scaffold / Edge protection	**Failure of structure**	• Scaffold and Edge protection to be erected and dismantled by certified personnel • Ensure Scaffold/Edge protection is not tampered with by weekly checks
	Risk of Fall if not used according to instructions	• Induct and train all personnel to site • Have property closed off to public, have safety chain with lock to eliminate people climbing • Use Safety harness when work over 3 meters
	Weather on the day • Condition of the roof surface of bus • Moisture conditions (rain, ice, frost, snow) • Wind speed • UV radiation & glare	• Anticipate adverse weather conditions and suitable precautions taken • Do not start the job until it is safe • Provide appropriate personal protection - wet weather gear, sun block.
Getting tools safely on to height	**Falling materials causing damage and/or injury**	• Tape off fall zones if applicable • Determine no go areas for all persons except those directly involved in the working at heights • Complete as much work as possible at ground work
	Environmental **Manual Handling/Sprains & Strains**	• Do not start task until safe to do so • Warm up before work starts • Use a mechanical means or sufficient people to assist with any awkward or heavy lifting of equipment.

WORKING AT HEIGHTS – USING LADDERS, SCAFFOLD AND EDGE PROTECTION		
TASK/ STEP	**RISK**	**CONTROLS**
Scraps & debris from work carried out	**Mishandling of Scaffold** **Slips/Tip/Falls**	• Dismantle of scaffolding by trained and certified person/s • Work area cleaned up and all scraps and debris put in rubbish container and removed from property

SAFETY WHEN USING ELECTRICAL EQUIPMENT INCLUDING POWER TOOLS		
TASK/ STEP	**RISK**	**CONTROLS**
Using Electrical Equipment	**Electric Shock**	• All tools are checked 3 monthly • Earth leakage units used • All guards fitted and in working order • Keep working area clean and tidy • Eye and ear protection worn
	Cut	• PPE worn at all times • All guards fitted and in working order • keep working area clean and tidy • Eye and ear protection worn
	Flying debris	• PPE worn at all times • All guards fitted and in working order • keep working area clean and tidy • Eye and ear protection worn

HOIST OR TRENCHES VISIBLE IN DEPOT		
TASK/ STEP	**RISK**	**CONTROLS**
Not relevant to Connexionz personnel; however, need to be made aware of.	**Falls thru Holes**	• Warning hazardous signs in place, No Unauthorised Entry • fencing and danger tape used, illumination of hazards areas • Subcontractors comply with site Health and safety and provide their Site safe plan for works to be undertaken • PPE at all times
	Unsecure structures	• Suitable Hoarding • Secure objects

WORKING IN CONFINED SPACE		
TASK/ STEP	**RISK**	**CONTROLS**
Not relevant to Connexionz personnel; however, need to be made aware of.	**Asphyxiation, Death, Hazardous Atmospheres, Combustibility, oxygen deficiency.**	• PE to be used • Ensure Ventilation? extraction fans are operating • Use retrieval equipment - pole safety belt • Have a safety watch person present and communicate regularly with the watch person • Ensure site clean and tidy • Ensure no combustible substances are present

WORKING ON ROOF OF BUS (when necessary)		
TASK/ STEP	**RISK**	**CONTROLS**
Working on Bus Metal Roof	• Assessment of the roofing materials • Fixing & Strength • Corrosion • Out of alignment • Skylights • Fibreglass/Plastic sheeting Note: Metal roofs are designed to take the weight of a worker and a gab of tools up to a capacity of 110kg.	• Scaffolding erected by trained competent or certified persons in accordance with the; • SARNZ best practice guidelines • Inspect thoroughly to determine strength, when possible; include inspection from inside the bus as well as externally.
	• Weather on the day • Condition of the bus roof surface • Moisture conditions (rain, ice, frost, snow), • Wind Speed • UV radiation & glare	• Anticipate adverse weather conditions and suitable precautions taken • Provide appropriate personal protection - wet weather gear, sun block. • Do not start the job until it is safe
	Electricity	• Do not erect within 4 metres of power lines/telecom etc. • Obtain consent from provider to work within safe distance if required • Training and supervision • Determine who is responsible
Getting tools safely on to bus roof	**Falling materials causing damage and/or injury**	• Use backpacks, tool belts, rubber based tool trays to prevent tools from falling • Tape off fall zones if applicable • Determine no go areas for all persons except those directly involved in the roof work
Working on bus roof	**Electrical shock from power tools**	• Complete as much work as possible at ground work • Use only battery powered tools where available • All electrical equipment to be within test date and visually inspected prior to use • All electrical equipment to be run through a commercial grade RCD
	Electric Shock from Power Lines	• Orion to be notified when work is required to be carried out within four metres of power lines

WORKING ON ROOF OF BUS (when necessary)		
TASK/ STEP	**RISK**	**CONTROLS**
	Environmental	• Do not start task until safe to do so
	Manual Handling/Sprains & Strains	• Warm up before work starts • Use a mechanical means or sufficient people to assist with any awkward or heavy lifting of equipment.
	Open wounds/inhalation/piercing/eye injuries	• Provision of appropriate Personal Protective Equipment • Training in the use of PPE
Completion & removal of equipment off bus roof	**Equipment & tools falling from roof and striking people below**	• Use backpacks, tool belts, rubber-based tool trays to prevent tools from falling
	Falls sprains/strain	• Dismantle of scaffolding by trained and certified person/s
Scraps & debris from work carried out	**Slips/Tip/Falls**	• Work area cleaned up and all scraps and debris put in rubbish container and removed from property

OVERHEAD CABLES / LINES		
TASK/ STEP	**RISK**	**CONTROLS**
Working within 2.2 to 5 meters of overhead lines	**Identify hazards** Appropriate provision of Information & Supervision	• Induction, Sign in sign out documented • Training • Access identified • Supervision, Site inspections • Signage, barriers • Person in Control Identified • Emergency Procedures
Access to overhead lines	**Risk of severe death or injury**	• Disconnection of power supply. From line owner. Consent obtained by line owner to work within required distance.
	Environmental	• Do not start task until safe to do so
Reinstatement of power	**Risk of severe death or injury**	• Reconnection of power supply. From line owner.

CONNEXIONZ
Smart Transit Solutions

CASE STUDY

Santa Clarita Transit

With increasing demand for transit services, Santa Clarita Transit chose Connexionz to optimize bus performance and improve the passenger experience with astonishingly reliable data.

The City of Santa Clarita Transit provides bus services within and outside of Santa Clarita, enabling commuters to travel to and from areas such as Los Angeles, Century City, North Hollywood, San Fernando Valley, and Burbank.

When the agency assumed responsibility for the service in August 1991, 300,000 riders were boarding one of 13 buses along eight fixed local routes. In the months that followed, the network introduced a new Dial-A-Ride service, expanded its commuter services, and added a paratransit service for seniors and disabled within the Santa Clarita Valley.

Since then the demand for transport services has been steadily increasing, as new residents and businesses continue to relocate to Santa Clarita Valley. Today, Santa Clarita Transit's 100-vehicle fleet provides service for 3 million passengers per year, along 11 local fixed routes. Offering several supplemental school day routes to relieve crowding on local buses in the morning and afternoon, as well as station link routes to open more travel options for passengers who are commuting from nearby areas.

To manage quick growth and maintain service reliability, the agency sought a system that could monitor the network in real time while also providing reliable predictions of bus arrival times in the most accurate format possible.

RELIABLE AGENCY PERFORMANCE MONITORING IN REAL-TIME

To manage quick growth and maintain service reliability, the agency sought a system that could monitor the network in real time while also providing reliable predictions of bus arrival times in the most accurate format possible. They collected data hoping it would be used to highlight issues and areas for improvement. In 2009, after considering many available options, they decided to invest in the Connexionz Intelligent Transit System.

The baseline for all the important service information needed by the agency is found in the sophisticated algorithms in the Connexionz real-time tracking system, which calculates live arrival predictions for buses at all bus stops.

Adrian Aguilar, Transit Manager, City of Santa Clarita explained, “At the time we didn’t have advanced technology in place that allowed us to track vehicles or provide real-time arrival information. While we did test cell phone based GPS systems, the data was limited, not very reliable, and could only provide a high-level view of the operation. We collected all on-time and system performance data by a team of ride checkers by randomly sampling riding trips on a weekly basis.

“We decided to run the new Connexionz system for a few months before advising our bus operators and customers that we were tracking routes, collecting trip data, and providing real-time arrival information. The reason was to test the data collected and fix any bugs first, while also providing a baseline for performance data compiled by the system.”

Once the system went live, Santa Clarita Transit’s on-time performance rate increased from an average of 81% to 88% without making any substantial changes to the routes or schedules.

“We attributed the difference to the system’s ability to monitor individual operator behavior and performance,” said Aguilar.

PROVEN ACCURACY REALLY DOES MATTER

Not every intelligent transit system is created equal. Only a system like Connexionz can produce these considerable results in such a short amount of time. Connexionz prediction algorithms continuously ‘learn’ the nuances of an agency’s operations in conjunction with real-time positions and a set of complex historical data. When it comes to increasing the passenger’s perception of service, nothing does quicker work than accurate data.

When it comes to increasing the passenger’s perception of service, nothing does quicker work than accurate data.

Connexionz performance has been proven on a global scale, and recent analyses in Canterbury, New Zealand, have provided detailed statistical evidence for the accuracy of the RTT system. The Connexionz RTT system was shown to maintain accuracy across different active routes, bus stops, and during peak travel hours, demonstrating the versatility and sophistication of the system. Despite this compelling data, further analysis in Santa Clarita hoped to extend these findings to overseas regions and ensure that the RTT system’s high performance was preserved on a global scale. A comprehensive statistical analysis was conducted in Santa Clarita to assess the Connexionz RTT system which, uses sophisticated algorithms to derive real time arrival predictions for buses at all bus stops

In this analysis, 20 bus stops were analyzed ranging across the Santa Clarita region, and extending to areas such as Los Angeles and North Hollywood for those commuting out of town. The analysis was conducted over approximately 6 days, assessing 38 routes in total. The analysis primarily compared actual versus predicted arrival times for buses to verify the accuracy of the Connexionz RTT systems prediction

algorithms. The data was obtained through a reliable and repeatable methodology that obtains actual times of arrival when predicted time is set to a certain level. In this analysis, predicted time was set to 10 minutes, and further analyses at predicted times of 5 minutes and 20 minutes were conducted to corroborate evidence. During that time, it showed that the two data sets (predicted versus actual) were within 0.75 percent of each other, and the system maintained accuracy across Santa Clarita Transit's different active routes, bus stops, as well as during peak travel hours.

"The statistical evidence Connexionz provided was enough to convince our contractor of the system's reliability and for us to transition away from manually collected data to using Connexionz RTT data in the payment of incentives and assessment of damages," said Aguilar. This was an important and crucial step in bringing Santa Clarita a much more impressive and safe level of service delivery.

Data count and average arrival times		
Route No.	Count	Average actual arrival time
1	296	11.834
2	197	9.406
3	114	10.289
4	138	11.196
5	334	10.749
6	518	10.488
7	195	10.559
12	552	9.877
14	189	11.196
501	23	9.130
502	35	10.914
620	7	11.143
621	3	10.333
622	3	7.667
623	8	12.250
624	3	11.333
625	0	N/A
626	11	14.727
627	6	11.500
628	7	11.143

Data count and average arrival times		
Route No.	Count	Average actual arrival time
629	6	12.167
631	4	11.500
632	3	9.000
633	0	N/A
634	0	N/A
635	6	14.167
636	10	11.000
637	2	13.500
638	1	14.000
639	3	12.667
640	7	12
757	77	11.857
791	20	13.300
792	27	13.444
794	23	12.652
796	10	9.300
797	71	10.423
799	94	10.084
Grand total	**3003**	**10.658**

Table 1: Count of pieces of data obtained and calculated average actual arrival time for analyzed routes with a predicted arrival time of 10 minutes.

AGENCY IMPROVEMENTS

Accurate and reliable prediction of bus arrival times:

- Accurate and reliable prediction of bus arrival times:
  - Keeps passengers informed
  - Increases service reliability
  - Improves passenger experience and customer satisfaction
  - Increases ridership rates
- Customizing passenger information content for displays with accurate predictions for every route
- Manage to route and schedule more efficiently
- Develop system of incentives to reward driver performance
- Accurate reporting and assessment of damages, service inefficiencies, emergencies, and important National Transit Database mileage data

IMPROVING THE PASSENGER EXPERIENCE WITH ACCURATELY PREDICTED ARRIVAL TIMES

The proven accurate data collected by the system not only improves bus operations by allowing for the efficient management of routing, scheduling, and driver performance, it also helps to improve the passenger journey.

Santa Clarita Transit passengers immediately noticed the benefit of the new predicted arrival times. With live updates on LED displays at the bus stops, riders no longer worried where their next bus was or whether they were running on time. Providing passengers with peace of mind makes the trip a lot more comfortable.

Even with longer estimated arrivals of 10 minutes or more, the accuracy of the system is reliable enough that passengers can be 95% confident that their bus would arrive within seconds of the predicted arrival time across all routes both inside and outside of the city.

"It's so much more convenient knowing when our bus is going to arrive. Before Santa Clarita installed the new information signs, we had no idea how long we'd have to wait, or even if we'd just missed our bus. Now, we can plan to be at the bus stop on time, or if it's going to be later, we can make alternative arrangements, or let friends know that we're running late." – Santa Clarita passenger Wayne Mead still makes praise about a reliable service even almost ten years after the initial technology installation.

BETTER SERVICE FOR PASSENGERS

- Know when the next bus is arriving via LED displays at bus stops
- Keep informed throughout the journey with audio announcements of next stops
- Travel with confidence knowing when you will arrive at your destination
- Other California agencies might experience unreliable predictions while Santa Clarita's predictions have remained consistent since 2010, creating a positive and increasing brand value