



# BUSPAS SOLUTION INTRODUCTION



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# EXECUTIVE SUMMARY

Public transit is the backbone of any city. It is the most accessible and least expensive way to get around and helps connect people to each other and the rich experiences cities have to offer.

Passenger signage plays a key customer experience (CX) role in every transit system. Modernizing signage is key to improving the modern customer experience which in turn drives ridership and prepares urban spaces for the future.

The BusPas Roadside Passenger Information Display System and ORA Management Ecosystem offers transit agencies and municipalities the ability to monitor, adapt, and innovate services. The overarching goal: improving the quality of life for all urban residents. The Smart City era is approaching, and BusPas is determined to bridge the gap between today and tomorrow. Our solution represents the missing link between where transit agencies are and where they need to be.

## Our goal is twofold:

- Update signage to simplify navigation and improve CX
- Collect real-time data to continuously improve transit offerings and quality of life

The BusPas solution allows cities to gather reams of rich, real-time information and also to transform that information into actionable insights and practical solutions. Our goal is to enhance the customer experience for every transit rider with real-time information, smart lighting, emergency call buttons with two-way communications, micro transit options, and AI-driven predictive and active safety features.

In addition, our solution also creates opportunities for cities to save money and create new revenue streams. Savings can be realized by solar powered signs and improved planning and scheduling, reducing financial waste. New revenue can be achieved by way of localized advertising and opportunities to more easily detect and enforce bus lane violations and similar infractions.

# WHO WE ARE

BusPas is a Canadian startup innovating solutions to help transit agencies, riders, and cities achieve better outcomes. Our layered solution is built to make transit agencies more proactive and responsive to the needs of riders while laying the foundation for the cities of the future.

# BUSPAS SOLUTION

The BusPas solution integrates IoT sensors into passenger information screens at bus stops and bus shelters. These sensors collect and send real-time data to a central system for storage and analysis, where AI and deep learning refine it and derive insights to enhance transportation services for operators, commuters, and cities. These screens can also receive data that is immediately useful to transit riders, including information pertaining to delays, rerouting, and emergencies.

## The result:

A better and safer experience for riders; more robust data for transit agencies to create better and more efficient transit systems and shared mobility options; and more robust data for planners to innovate the smart cities of the future.

# THE BUSPAS SOLUTION CONSISTS OF THREE LAYERS:

01

## TECHNOLOGY LAYER — THE SMARTSIGN DISPLAY UNIT

A smart Edge Computer with built-in sensors and an interactive display interface forms part of a secure IoT infrastructure, enabling robust data collection and transfer from the physical environment.

02

## COMMUNICATION LAYER — INTEGRATED WITHIN THE SMARTSIGN DISPLAY UNIT

High-speed, low-latency broadband and mobile networks support wireless communication via cellular, wifi, and Bluetooth.

03

## SOFTWARE LAYER — THE ORA MANAGEMENT ECOSYSTEM

Our software infrastructure with API-centric services to manage sensors and translate raw data into actionable insights through modular applications.



# BUSPAS SOLUTION → TECHNOLOGY LAYER → SMARTSIGN

Our solution starts with the SmartSign display unit. Its role is twofold:

- Collect data to be processed
- Receive and display information relevant to transit riders

## The SmartSign:

- Unlimited number of routes and arrival predictions
- E-ink displays for clear legibility and readability
- Anti-glare and sunlight readable characters
- LED front lighting when needed
- Solar powered with battery backup
- IP65 rated
- Operates from -22°F to +140°F (-30°C to +60°C)
- Wide-format SmartSign option features an ultra-wide viewing angle



The SmartSign receives GTFS-RT data and messages via an integrated cellular modem and antenna. Transit agencies manage display content through our CMS, which supports custom banners with logos, date/time, Stop ID, URLs, and customer service info.

The display automatically shows real-time arrival times, delays, detours, alerts, and optional data like wheelchair availability, passenger load, and transit connections. Each unit supports unlimited routes, flexible time formats, and includes LTE (5G-ready) connectivity, motion/light sensors, speakers, microphones for two-way communication, security lighting, and a multilingual ETA button.

SmartSign functions as both urban furniture and a smart hub, connecting the bus stop environment to a secure cloud platform. It enhances rider experience, supports integrated and sustainable mobility, and delivers real-time audio/visual updates. Designed for Mobility-as-a-Service (MaaS), it enables open communication, improves safety, and provides valuable data for continuous transit system improvement.

By transforming traditional infrastructure into intelligent, data-driven assets, our solution empowers cities to make informed decisions, improve transit operations, and meet the future head on.

## The SmartSign offers a better and more inclusive CX:

- Real-time passenger info via GTFS/RT integration
- ADA-compliant text-to-speech and visual/audio alerts
- Detour mapping and orientation support
- New communication channel for branding or public messaging
- Enhanced safety with lighting and emergency call features

## Additionally, SmartSign makes it easier to improve operations:

- Real-time detour, delay, and alert updates
- Cost savings over paper-based detour notices
- Remote monitoring of shelter conditions
- Improved nighttime visibility with lighted stops and e-paper displays
- AI-powered passenger counters for planning
- Integration with MaaS services like demand-response transit and bike sharing

## Lastly, the SmartSign helps generate smart City data:

- Detect vehicles in bus lanes
- Computer vision to identify anomalies
- Bicycle, car, and truck count for urban planning purposes
- Fully expandable (additional smart sensors)

The BusPas solution is scalable, and as cloud and edge computing capabilities get better, it improves.



## SOLUTION → TECHNOLOGY LAYER → ORA

ORA is our secure, cloud-based software layer that powers all manner of smart mobility services. Built on Microsoft Azure using a set of secured protocols for authorization and accreditation, ORA allows our SmartSign displays to be smart data hubs that collect and communicate real-time data and insights that help improve transit operations, safety, and urban planning outcomes for all stakeholders.

### ORA's key functions:

- Ingest IoT data from SmartSign displays
- Push GTFS/GTFS-RT updates to SmartSign displays
- Monitor services and send alerts
- Manage bus stop and device configurations
- Control display content and system parameters

ORA supports smart mobility, shared roadways, and smart city applications. The SmartSign display is the hub, but ORA is what allows us to turn every bus stop into a data-rich, connected asset.

# AGENCY PORTAL

The Agency Portal is a robust web app that provides transit agencies with control and visibility over SmartSign devices installed at transit stops. It enables remote monitoring and management of various parts of the SmartSign, including:



Speaker Systems



Lighting



Environmental Sensors



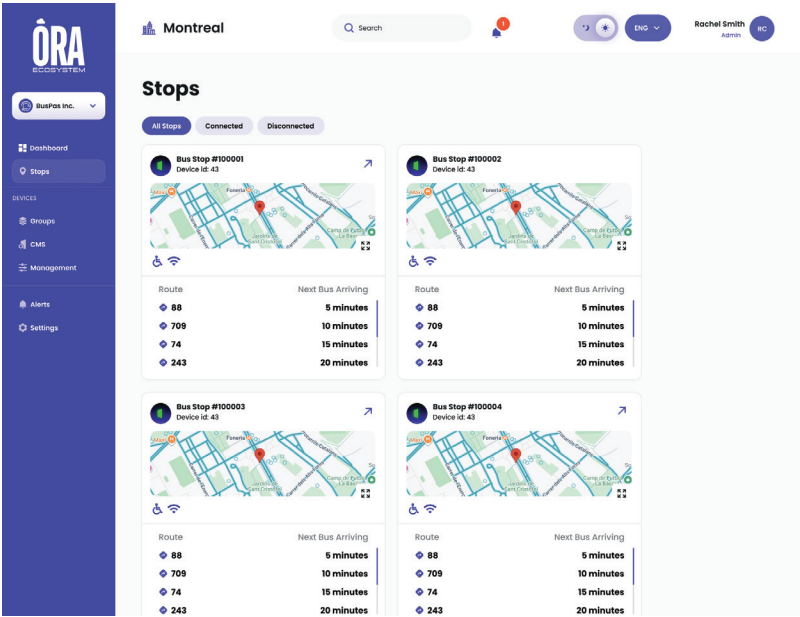
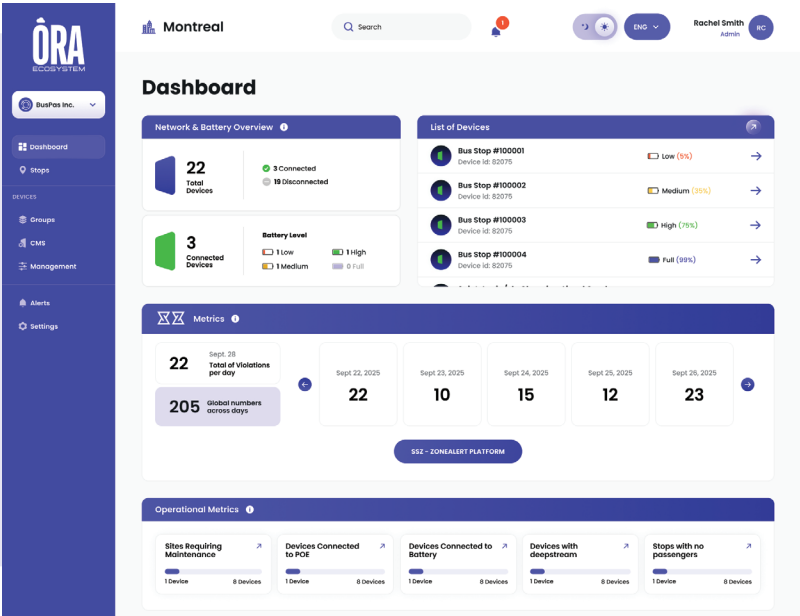
Computer Vision



Power Settings

## Dashboard

The dashboard serves as the agency portal's landing page, offering administrators real-time insights into device status and health. Featuring an interactive map and a device list, the dashboard allows the admin to easily identify simple technical issues (i.e. offline devices) while also monitoring operations across all locations.



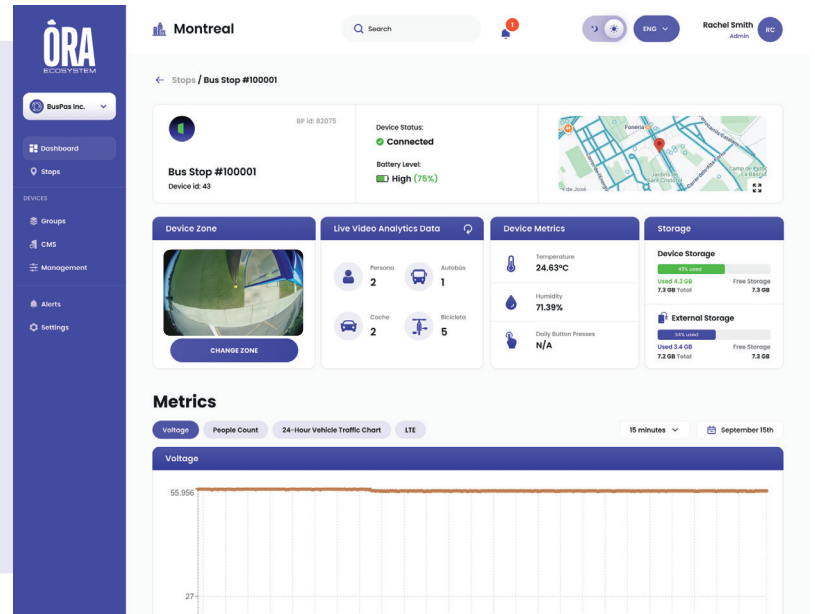
## Stops Page

The Stops Page consolidates all deployed devices alongside GTFS and GTFS-RT data, providing real-time transit information and device activity, with indicators showing the online/offline status of both devices and data feeds.

## Device Page

The Device Page offers detailed monitoring and control for individual devices. Administrators can view live and historical data, including:

- Connection status, battery level, power mode
- People and vehicle count
- Memory, storage, temperature, humidity, voltage, LTE metrics



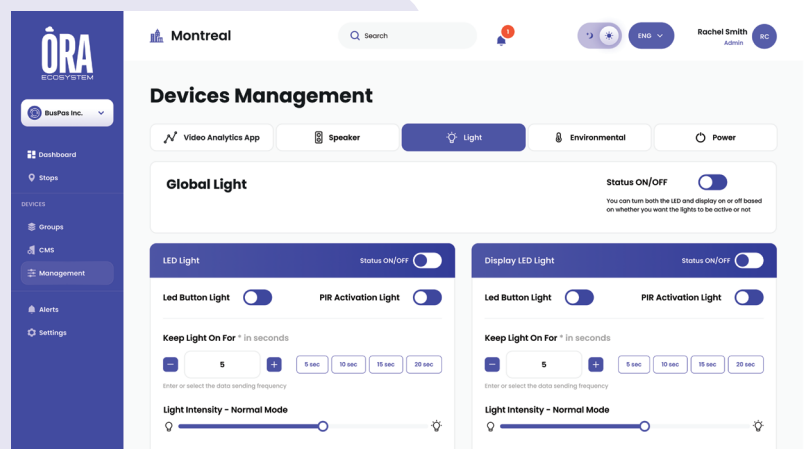
Historical data is accessible by date, though some metrics are live-only. Administrators can control device modules (i.e. speakers, lights, sensors, and computer vision zones) using intuitive controls. Some devices even allow for scheduled configurations.

## Module: Speaker Management

- Schedule announcements via button press
- Options for route order or earliest arrival
- Multilingual output with customizable language options
- Adaptive volume settings based on power mode, day, and time

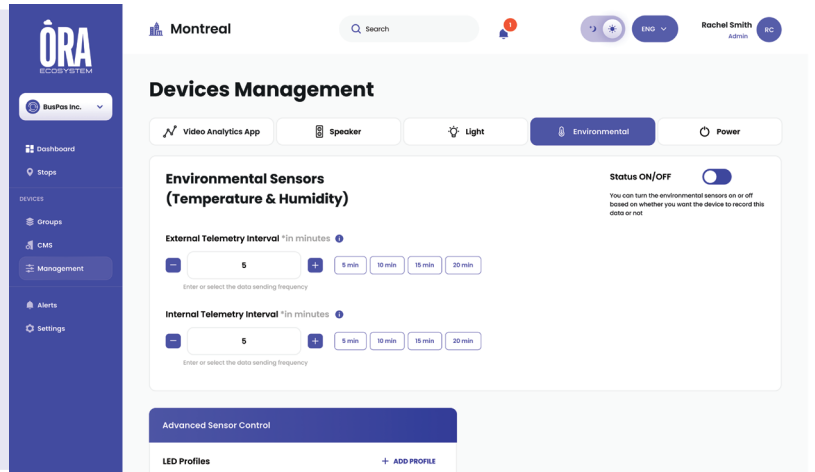
## Module: Light Management

- Central control of security and display LEDs
- Adjustable intensity and duration
- Activation triggered by button press, motion, or ambient light
- Customizable schedules and input source settings



## Module: Environmental Sensors

- Temperature and humidity monitoring
- Admin can toggle sensors
- Admin can set data transmission intervals for efficient monitoring

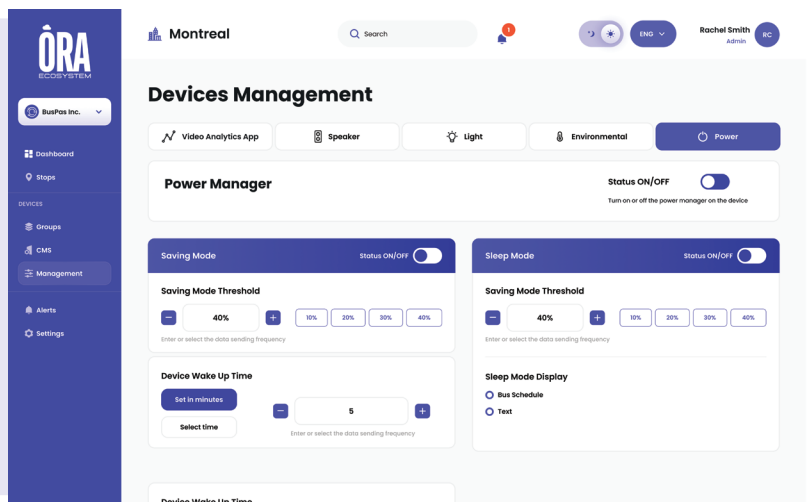


## Module: Computer Vision

- Analytics within defined Regions of Interest (ROIs)
- Detects and counts pedestrians, vehicles, buses, and bikes
- Tracks dwell times to support transit planning and optimization

## Module: Power Management

- Configure operations based on battery thresholds and schedules
- Display bus schedules or custom messages even in sleep mode
- Programmable wake-up times for efficient energy usage



# AGENCY PORTAL → CMS

Our CMS is effective out-of-the-box while remaining highly customizable, allowing transit agencies to deploy our solution in a variety of ways and communicate with riders with varying degrees of granularity.

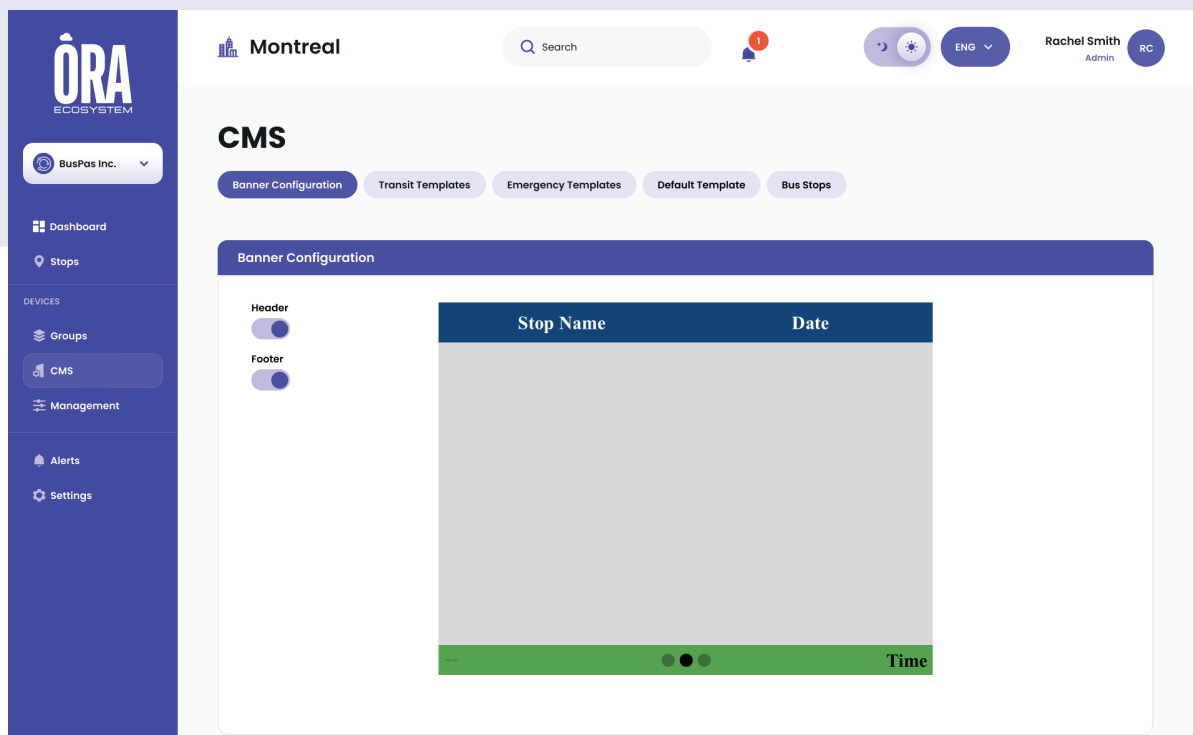
Administrators use the CMS to control, manage, and deploy digital content on the SmartSign. Digital content options include but are not limited to text, graphics, embedded audio, embedded video, as well as GTFS and GTFS-RT feeds.

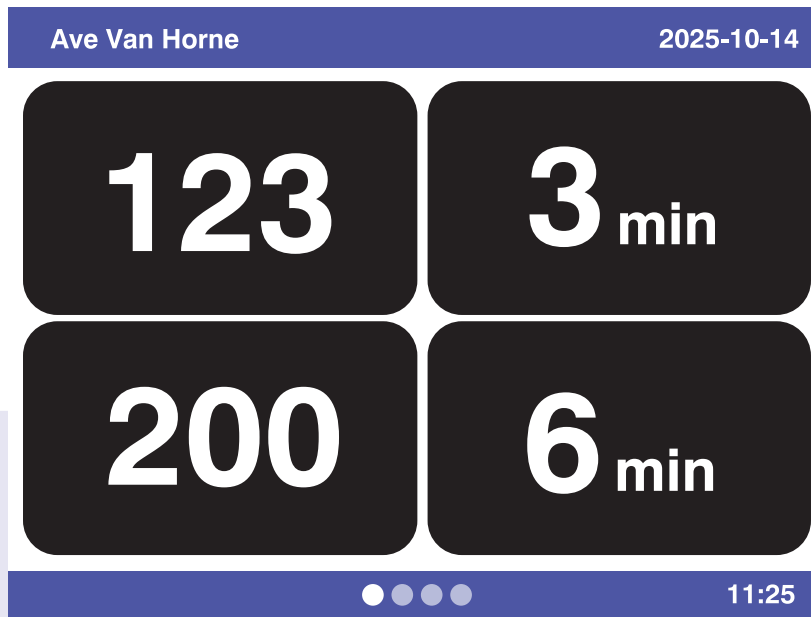
The CMS offers default templates with unique designs and the capability to create custom templates. Playlists can be created by using different templates in specific sequences and with specific frequencies.

By way of the CMS, content can be sent to individual, multiple, or all SmartSign units. Groupings can be determined by the end user, but a good example would be if a certain set of messaging was sent to each stop on a specific route a stop(s), route(s), number of routes serving a bus stop, zones such as commercial, school, and residential, and geo-locations.

## The CMS allows the admin group to create:

- Custom templates (made of pages)
- Custom pages (made of tiles)
- Emergency messages for immediate broadcast and display
- Global top and bottom banners





### Tiles are customizable, and can show the following information:

- Destination
- Route #
- ETA
- Passenger load
- Connection to train, subway or other multi-modal transport
- Wheelchair availability
- Messages
- Advertisements
- Any other transit or general information available from the customer

The landing page when accessing the CMS software is the Template Tab, providing a listing of all the available templates.

### By way of the template tab, users can easily see which templates are available to work with:

- Template name
- Template status (deployed, archived, drafts)
- Number of pages added to a given specific template
- Date/time when templates are created and/or updated
- Name of the user who created or updated the template

# TECH SPECS

## General

- 27.1" (H) x 12.8" (W) x 1.44" (D) / Standard SmartSign
- 688mm (H) x 326mm (W) x 36.45mm (D) / Standard SmartSign
- 15lb (6.8kg) / Standard SmartSign
- 12" (H) x 30" (W) x 2" (D) / Wide SmartSign
- 305mm (H) x 762mm (W) x 51mm (D) / Wide SmartSign
- 15.5lb (7kg) / Wide SmartSign
- Fast mounting on any pole/shelter
- Operates from -22°F to +140°F (-30°C to +60°C)
- Certified to UL standards
- Compliant to IP65 rating
- Vandal proof design

## Technological

- NVIDIA Orin processor optimized for AI software and cloud-native workflows
- Mobile LTE/4G/5G network
- 802.11a/b/g/n/ac (2.4GHz / 5GHz) Wi-Fi sensor
- Bluetooth 5.0 Sensor Beacon (2.4GHz)
- 12MP Camera: 4056 x 3040
- Dual high-sensitivity microphones
- Speakers

## Lighting

- Dimmable 5W with 500 lumens
- Passive infrared (PIR) motion sensor
- Ambient light sensor
- Multiple CCT and CRI configurations

## E-paper display

- High-contrast reflective electrophoretic technology
- 13.3" diagonal active screen size / Standard SmartSign
- Resolution: 1600 x 1200, Glass TFT / Standard SmartSign
- 28.2" diagonal active screen size / Wide SmartSign
- Resolution 3840 x 1080, Glass TFT / Wide SmartSign
- screen LED front light at night
- 4096 colors or 16 grayscales
- black and white or 16 grayscales

## Powering Options – On/Off Grid

- power supply 12-18 VDC or Via passive PoE
- solar panel, battery and mounting pole depending on requirements

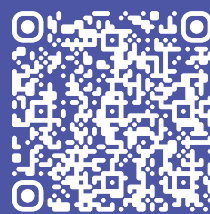
Read our Solution in other  
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**Enhancing mobility.  
Enabling smart cities.**

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