

# Simple Software Explainer

**SMB-IAI-0006**



**TRAFFIC**  
APPLICATIONS



**ITS**  
APPLICATIONS

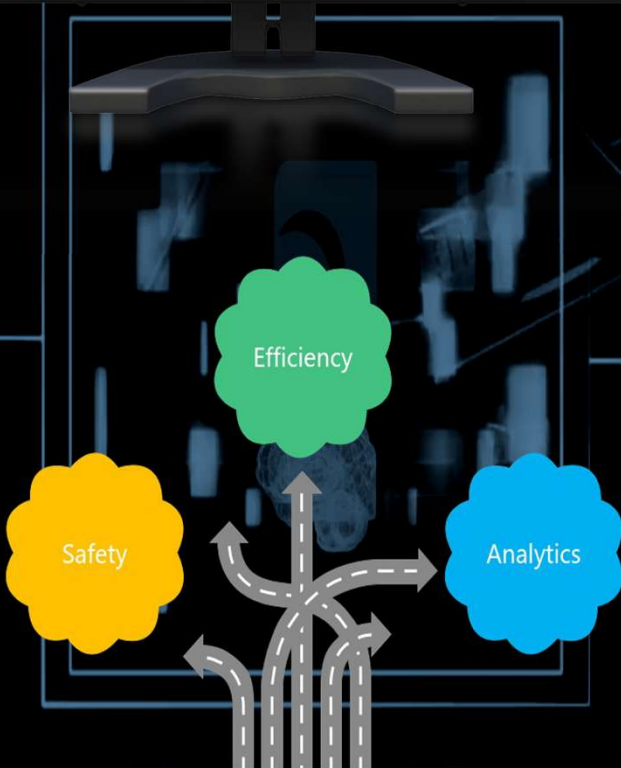


**PARKING**  
APPLICATIONS



## Benefits of Integrator-AI

**Integrator-AI** is a highly versatile transportation compute platform that provides real-time control, monitoring, and data sharing at the edge. It can be used to rapidly solve highly sophisticated safety, efficiency, and analytic transportation problems by providing tools and a platform to build real-time action, coordination, and data aggregation solutions.



**ADD MISSING FUNCTIONALITY/BEHAVIOR TO EXISTING/LEGACY AND NEW DEVICES.**



**INTEGRATE NEW TECHNOLOGY AND PROCESSES INTO THE TRANSPORTATION INFRASTRUCTURE AT A RAPID PACE.**



**INCREASE SAFETY AND EFFICIENCY AND ALLOW THE FLEXIBILITY OF USER-CONFIGURED BEHAVIOR, LOCALIZED ANALYTICS, AND SPECIALIZED APPLICATIONS.**



**CREATE A PROPRIETARY FREE SYSTEM AND REMOVE OBSOLESCENCE DUE TO DEVICE CONSTRAINTS. CHOOSE THE SENSORS THAT BEST FIT YOUR NEEDS AND ENHANCE THE CAPABILITIES OF THE EXISTING SENSOR.**



**PLACE SMART CONTROL OF DEVICES AT THE EDGE INSTEAD OF THE CLOUD FOR REAL-TIME RESPONSE AND ACTIONS.**



**IMPLEMENT SPECIALIZED APPLICATIONS/STUDIES WITHOUT THE NEED FOR EXPENSIVE HARDWARE AND R&D**



**BUILT TO GROW AS TECHNOLOGY ADVANCES AND INDUSTRY DEMANDS EVOLVE (FUTURE-PROOF).**



**PROVIDE AN ABSTRACT INTERFACE FOR OTHER SERVICES AND TECHNOLOGY TO INTEGRATE INTO YOUR TRANSPORTATION INFRASTRUCTURE AT THE LOCALIZED LEVEL.**



**TAP INTO THE REAL-TIME DATA OF YOUR EQUIPMENT FROM A CENTRAL STATION OR CUSTOM SERVICE.**

# Benefits of Using Integrator-AI

## **01. Our Device Is Used to Solve Complex Transportation Problems**

We frequently encounter requests to integrate two or more products into a highly customized configuration that is not readily available in the market. Why is this the case? The reason is that these challenges tend to be unique for each customer, making it impractical for manufacturers to provide off-the-shelf solutions. Blue Band has a long history of addressing such challenges, and our experience has taught us that creating a one-size-fits-all solution was not feasible for most technology companies. That is exactly why we developed Integrator-AI. It was designed to provide the tools and platform to create tailor-made solutions for each customer.

## **02. We Are Designed to Connect Simultaneously to All Transportation Devices & Services**

To effectively solve highly sophisticated transportation problems, it's essential to integrate data from various devices while maintaining simultaneous control seamlessly. Data fusion provides a comprehensive view of the operational landscape, while control provides real-time, automated responses. When these two elements are combined, they offer the capability to tackle virtually any complex issue that arises within the transportation industry. But what about emerging technologies? The Integrator-AI is engineered to interface with existing legacy systems and new technological innovations. This forward-thinking design ensures the Integrator-AI remains a valuable asset for an extended duration, benefiting all stakeholders within the industry.

## **03. We Are Product Agnostic**

There are many transportation solutions on the market today. Some adhere to industry standards, while others maintain their proprietary nature. The Integrator-AI platform has been designed to seamlessly interface with all products, alleviating concerns regarding compatibility between various technologies. When using Integrator-AI, these compatibility worries become a thing of the past. [Please refer to PS-0003 - [Edge Compute Platform Features Specification](#) for additional information on drivers, apps, etc. that make the Integrator-AI the most versatile edge compute system in transportation™ ]

## **Benefits of Using Integrator-AI**

Integrating the existing transportation infrastructure is an intricate undertaking that demands a deep understanding and a nuanced approach to accommodate diverse technologies. However, thanks to the Integrator tools and platform, manufacturers can now gain access to these capabilities without depleting their valuable resources or investing excessive time, vastly reducing the path to market. The Integrator-AI is the gateway to transportation infrastructure, and this transition can be achieved swiftly and efficiently. This liberates manufacturers to focus on their core strengths and what they do best – refining their products.

### **04. We Can Be installed on Just About Anything**

A significant concern for agencies is the potential for equipment overload within control cabinets, which introduces additional points of failure. In response to this challenge, we designed the Integrator-AI to be deployable on a wide array of devices, offering the distinct advantage of co-location with other software and products on the same hardware. Our successful deployments have encompassed a wide range of hardware, including traffic signal controllers, low-power devices, sensory equipment, servers, laptops, and OEM integration options, allowing businesses to bundle our solution with their products. In a noteworthy demonstration of versatility, we even controlled a traffic signal equipped with LiDAR detection using a Raspberry Pi.

### **05. Data Fusion**

Assessing intricate issues necessitates the integration of data gathered from various origins. For instance, determining whether someone violated a traffic signal by running a red light or if a pedestrian entered a crosswalk against the "don't walk" signal entails the analysis of data from both sensors and the traffic control system. The Integrator-AI allows for the evaluation of such intricate problems, drawing upon data from a diverse array of devices and services it interfaces with, regardless of their complexity.

### **06. Real-Time Action at the Edge**

Data is a valuable resource that can be utilized to detect problems, safety concerns, and opportunities for enhancement. However, taking immediate action is equally important. That's where Integrator-AI comes into play is a specialized tool created specifically for this purpose. Using our software, data can be gathered and transformed into real-time actionable insights. The greater value is that all of this can be accomplished at the edge.

## **Benefits of Using Integrator-AI**

### **07. Future Proofing**

The transportation industry is characterized by a multitude of specifications, protocols, and products, with the constant emergence of new technology. The demand for innovative safety applications utilizing this technology remains consistently high. How can one effectively stay up-to-date in this rapidly evolving landscape? The solution lies in utilizing the Integrator-AI, a versatile platform that effortlessly addresses these challenges. So, how does the Integrator-AI accomplish this? It achieves this by offering a platform meticulously crafted for swift development in three crucial areas:

- **Drivers:** The Integrator facilitates seamless interfacing with both new and legacy technologies, regardless of the specifications and protocols they employ, including proprietary ones.
- **Apps:** It empowers users to construct datasets and specialized application behaviors that deliver real-time solutions for the ever-evolving transportation industry needs, both now and in the foreseeable future.
- **Digital Wires:** With user-configurable functionalities, the Integrator offers access to all integrated devices and data. These "Wires" can be tailored to search for specific criteria and execute precise actions, enabling experimentation and the creation of customized applications.

The Integrator-AI provides a comprehensive solution to the challenges posed by the dynamic transportation industry, enabling agencies to easily stay ahead of the curve.

### **08. Great for R&D of Bleeding Edge Applications and New Solutions**

Developing new technology and solutions is tough. Yet, with the adaptability of the Integrator-AI at your disposal, you can now test and create new bleeding-edge solutions in "rapid time". The "rapid" development platform allows for effortless adjustments over time, enabling you to refine your solutions without the need for extensive time commitments.



# Benefits of Using Integrator-AI

## 09. Transportation Infrastructure Abstraction

This offers a significant benefit: individuals no longer need to concern themselves with the specific product they are managing; their focus is solely on defining the desired functional expansion concept with a consistent interface. Each interface is consistently managed, regardless of the manufacturer or product. As an added advantage, this eliminates vendor lock-in, allowing users to choose and utilize any product they desire without worrying about system compatibility.

## 10. Intuitive API

As technology evolves, it brings about increased complexity, which inevitably complicates the use of devices. Fortunately, the Integrator-AI offers a remarkably user-friendly API that adeptly manages this complexity for you, streamlining the process of integrating new technology and making it more efficient.

## 11. Equitability and Cost

The primary objective of the Integrator-AI is to ensure universal access to safety technology, eliminating disparities based on financial resources. To achieve this goal, the Integrator-AI was designed with the following features:

- Compatibility with existing field hardware to lower acquisition expenses for agencies
- Ability to co-locate with other software products on the same hardware, thereby reducing initial purchase costs and ongoing agency maintenance expenses.
- Deployment of low-powered hardware to minimize procurement costs.
- Autonomous operation at the edge, eliminating the necessity for costly communication infrastructure in areas with limited access.
- Seamless integration with existing infrastructures and legacy technology, thereby cutting costs for agencies in areas with fewer resources for adopting cutting-edge technology.
- Provision and facilitation of safety solutions without mandating the public in low-income areas to invest in additional technology, such as wearables, phones, phone apps, or specialized vehicles, just to access the deployed safety solutions.

## **Benefits of Using Integrator-AI**

- Promoting product accessibility by removing vendor lock-in, enabling agencies to source equivalent products at competitive rates.
- Eliminating the need to purchase expensive software solely for managing a variety of products.
- Lowering the entry barriers for low-income and minority businesses seeking to enter the industry with their products and services, offering a cost-effective pathway for integration into the transportation infrastructure.

### **12. Encourages Cooperation and Collaboration**

The potential for solving some of the industry's most complex issues lies in the integration of these technologies. However, the challenge lies in achieving seamless interoperability among all these products. Occasionally, manufacturers create additional features to facilitate collaboration, but this often results in limited functionality tailored to specific use cases, lower quality, and frequent vendor lock-in. By partnering with Blue-Band, manufacturers can focus on their core product strengths. The Integrator-AI serves as the link between diverse devices and products, creating applications to harness these technologies for the benefit of the industry.



## Integrator–AI Components

id

### Interface Drivers Analytics

Adapters that bring products/services into the Integrator AI platform designed for rapid development of standardized, proprietary, or specialized systems

ic

### Interface Connectivity

Interfaces into the Transportation Infrastructure devices and services such as Signal Controllers, DMS/VMS, V2X, and many more.

aa

### Analytic Apps Custom Builder

Specialized applications that run inside the Integrator, usually for analytics or sophisticated behavior that cannot be achieved via our Wiring system. Designed for rapid development as industry demands change

sd

### Service Dispatcher

Send events and messages – SMTP, TCP and DB- save analytics from Digital Wires” to a database

bc

### Broker|Connect

Endpoints that third-party services can connect to, using multiple protocols, which provide real-time control and data access at the edge.

Examples: email, text message, SNMP, HTTP REST API, TCP, UDP, proprietary .

dw

### Digital Wire “Transportation App Lab”

Highly configurable user-defined behavior between peripherals and data services. Digitally wire data and devices to work together extending legacy and new device capabilities while enabling rapid deployment when new safety and efficiency applications are needed



## Integrator-AI Components

**id**

### Interface Drivers Analytics

-  Video Analytics
-  Lidar Perception
-  Transportation Radar
-  Blue-Band Wireless Magnetometer
-  Cloud Services/Data






**ic**

### Interface Connectivity

-  Traffic Controller
-  Digital Message Signs
-  V2X Roadside Unit (RSU)
-  Intelligent Lighting Control
-  Cloud Services/Data

**dw bc sd**

### Data Wire Broker|Connect Service Dispatcher

-  NEMA TS2 Presence Actuation Wire
-  Logic Integration Wire
-  Interval Wire
-  Broker Connect - Data
-  Service Dispatcher

**aa**

### Analytic Apps Custom Builder

-  Analytics & Reports
-  Traffic Control (NEMA)
-  SPM+ & SPAT
-  Cabinet Health Monitoring
-  Cloud Services/Data



## Features

The Integrator AI gives the user the ability to easily add logical functions and thresholds to data received from new and legacy traffic control devices.

The Integrator AI interfaces with transportation infrastructure and digital services such as signal phase and timing data, zone data, per vehicle data, pedestrian data, lane data, approach data, and bicycle data without the need for software programming. That same logic can be tied together with our digital wiring protocol.

The digital wiring feature is user-defined to create the most versatile solutions and applications. The Integrator AI end-to-end solution uses the logic and wiring protocol to produce real-time actions using peripherals that output to transportation infrastructure such as traffic Signal Controllers, Digital Messaging Signs, Luminares, I/O interfaces, RSU's and many more.



### Bicycle

- Slow-moving bicyclist
- "Near miss" bicyclist and pedestrian or vehicular conflict
- Bicycle Count
- Bicycle Speed
- Bicycle in the crosswalk detection
- Bicycle in the lane detection
- Bicycle direction of travel
- Bicycle headway
- Bicycle gap
- Bicycle dwell
- Bicycle occupancy



### Pedestrian

- Slow-moving pedestrian
- "Near miss" pedestrian and vehicular conflict
- Pedestrian Count
- Pedestrian Speed
- "Ped button replacement" detect and service.
- Pedestrian in the crosswalk detection
- Pedestrian direction of travel
- Pedestrian headway
- Pedestrian gap
- Pedestrian dwell
- Pedestrian occupancy



### Vehicle

- Volume
- Speed
- Length
- Height
- Direction
- Dwell
- Occupancy
- Conflict
- Classification
- Wrong Way
- Presence





## Device Health Monitoring

- Operational State Monitor
- Monitor using ICMP
- Monitor using HTTP
- Monitor using SNMP
- Fault detection
- Resolve operational state
- User configurable monitors
- Networked device agnostic
- Device Health Alerts
- Up-time



## Dispatcher (Real Time Alerts)

- Email Alerts
- Http: Alerts
- Text Alerts



## Subsystem (Analytics)

- Object (all classes the sensor provides)
- ITS (TSS Analytics)
- Signal Performance Metrics
- Pedestrian Analytics
- Bicycle Analytics
- Vehicle Analytics



## Peripherals (Outputs to Infrastructure)

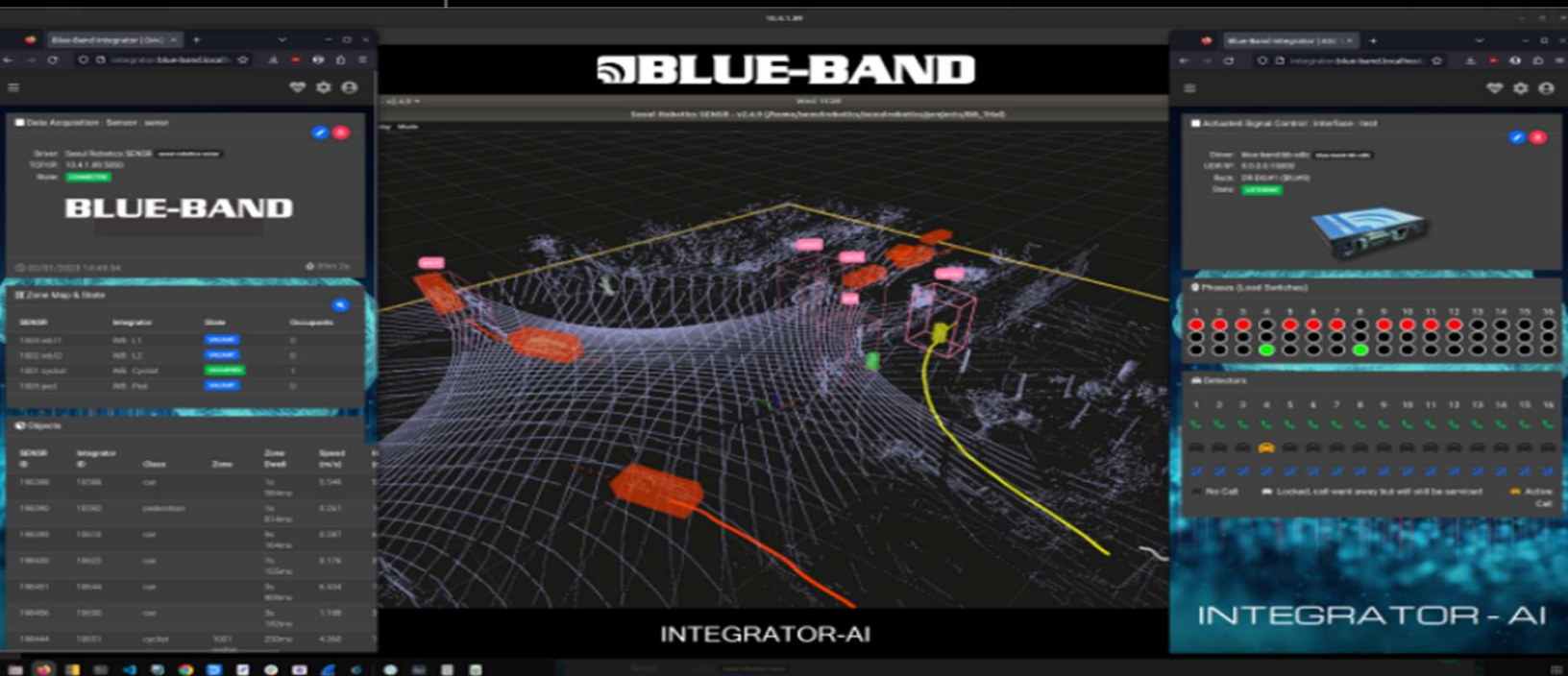
- SDLC
- NTCIP (traffic signal controller interface)
- CV2X (RSU Interface)
- Wireless Contact Closure
- I/O (PLC, SCADA Functionality)
- DMS/VMS (Read/Write Over NTCIP)



## Broker Integrations to 3rd Party Systems

- HTTP:
- JSON
- XML
- TCP
- UDP

# Features





## THE MOST VERSATILE EDGE COMPUTE SOFTWARE IN TRAFFIC!



### CONTACT US TODAY

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