Trapeze ITS solutions lead the future of transit, creating a continuous, end-to-end connection linking vehicles, customers, staff and operations. Trapeze ITS systems help to ensure rapid return on investment by improving service, reducing costs and increasing ridership for many kinds of transit organizations. Through integrated communications and third party integration, Trapeze is the intelligent solution to your transportation needs.

Trapeze ITS solutions provide the people transportation industry with advanced intelligence. Trapeze offers you:

- Intelligence on the Vehicle
- Intelligence at Home, in the Office and En Route
- Intelligence in the Operations Office
- Intelligence in the Back Office
- Intelligence for the Future

Example: Comprehensive ITS Solution in the Vehicle:

- Passenger Counting Instant Availability
- NextStop™ Annunciation
- Video Surveillance
- Farebox Integration
- Single Point Log-on and Vehicle Control
THE BUSINESS CASE for a Trapeze ITS Solution

On the Vehicle:
- Reduce costs, improve efficiency, safety and accuracy by automating operations with integrated single point control.
- Promote homeland security with public safety alerts and emergency alarms from the vehicle.

At Home, Office and En Route:
- Attract new riders by making travel easier and safer with instant information available anytime, anywhere.
- Support regional ITS architecture and 511 initiatives with open HTML-based system interfaces.

In the Operations Office:
- Prove the value of your transit operations to government agencies, your board, community leaders and the public.
- Manage system operations remotely and reduce operating costs with ‘point and click’ route deviation control and instant playback.

In the Back Office:
- Eliminate costly multi-vendor interface fees and improve prediction accuracy while providing real-time fare, passenger and location data to allow planners to maximize revenues and optimize routes.
- Improve return on investment by eliminating expensive duplication and maintenance of vehicle equipment and system databases.
- Design more efficient routes and operational procedures by linking departments together with shared databases and instant access to real-time information.

Future-Proofed Technology:
- Underlying ITS architecture is open and transparent to individual hardware components. Your system continues to grow with you as you change, upgrade and add hardware and software.

CUSTOMER SUCCESS STORY:
Ann Arbor Transit Authority, Michigan

“When I want to get a complex technology implemented, the one company I know I can rely on is Trapeze. There is no firm as technically solid. I have recently been watching their progress on their ITS, in my national ITS role. If I had to do it all over again, this is the system I would acquire.”

Greg Cook, General Manager (former), Ann Arbor Transit Authority
Board Member (former), ITS America

ABOUT TRAPEZE GROUP

Trapeze Group delivers solutions that consider the full 360 degrees of passenger transport. Whether addressing the needs of a single department, an entire organization, or the community, Trapeze provides some of the most advanced software, intelligent transportation systems (ITS) and mobile technologies in the industry. Hundreds of government and commercial organizations across Europe, North America and Asia Pacific have turned to Trapeze to realize efficiencies, enhance the quality and scope of their services, and safely transport more people with less cost. Visit www.trapezegroup.com.
Product Information

Mobile Data Terminal MDT

The Interactive Driver Interface

Trapeze’s Mobile Data Terminal (MDT) provides transit agencies with real-time interaction between the vehicle fleet and dispatch center for safer and more efficient operations. MDTs also help ensure control and accuracy with an onboard information and communication system.

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**The Business Case for MDT**

**Improving Driver Communication**

Quick and clear communication between dispatch and operations helps improve efficiency. Real-time updates and messaging to and from the vehicle mean no more waiting and wondering. A clear color screen is designed to work in day and night situations.

An Audio prompt lets operators know when a message is available. No need for extensive and time-consuming text entry—one touch responses allow operators to concentrate on the route, not the keyboard.

**Improving On-time Performance**

The driver terminal shows route performance to the driver. The driver can adjust his waiting times and knows exactly when to leave in order to meet adherence targets. Map navigation and turn-by-turn directions help experienced and new drivers navigate their Fixed and Paratransit routes with confidence and efficiency.

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**Single Log-on**

Designed for a ‘single log-on,’ the MDT allows drivers to not only log-on to the CAD AVL system, but also all integrated ancillary equipment onboard the vehicle. Rather than using a traditional keypad, an optional swipe card is available for drivers to utilize during system log-on.

Durable and functional, the MDT is specifically designed for vibration, climatic and harsh operating conditions that a transit vehicle may endure.

Specifically designed for the vibration, climatic and harsh operating conditions a transit vehicle endures.
Product Information

Mobile Data Terminal MDT

KEY TECHNICAL CHARACTERISTICS

Dimensions / Weight
• 7.99” L x 6.06” W x 1.5” H / 1.765 Ibs.

Screen Size
• QVGA: 6.8” diagonal / 4:3 ratio / 5.44” x 4.07” active area, or
• VGA: 6.4” diagonal / 4:3 ratio / 5.12” x 3.84” active area

Display / Type
• TFT-LCD backlit color QVGA / 320 x 240 pixels,
or VGA / 640 x 480
• Available in full color or monochromatic
• Visible in direct sunlight

Power Supply Voltage
• EU 17-32V, US 8-32V unregulated
• Over voltage: 36V / 1s; 100V / 1ms

Interfaces
• Digital Video Interface (DVI) for video signals (standard for TV, computer, etc.)
• RS232 interface for keyboard signals

Keyboard
• Backlit illumination
• 10 Programmable keys
• 12-Key alphanumeric keypad including (#) and (*) keys
• 4 Arrow keys in joystick configuration for navigation
• Dedicated keys for Emergency, RTT and PRT functions
• Dedicated keys for brightness and contrast control

Beeper (External)
• Unique audible beeps on incoming requests identify different functions

Reliability MDT
• Rated for minimum of 6,000 operating hours per year / 12 to 15 years

Keys
• Minimum two million (2,000,000) key presses

Backlighting
• Cold Cathode Fluorescent Lamp (CCFL) rated for minimum of 10,000 hours

Temperature Tolerances
• Normal LCD operating range: 0-50° Celsius
• Acceptable LCD operating range: -20-70° Celsius (restricted readability but no destruction)
• Maximum relative air humidity: 95%
• No condensation

Environmental Standards
• Protection standard: IP54 (front) / IP52 (back)
• US standard: MIL_Std-810, SAE1 J1455
• Hardware standard: HWR001
Vehicle Command Center

- Powerful, fast and rugged computing platform
- Forward-looking expansion potential
- All national transit database passenger and vehicle data/capture
- Full vehicle and subsystems control (up to 20 systems)
- Wireless interconnect to all onboard systems to reduce maintenance

Help ensure control, safety and accurate, efficient FTA-compliant reporting with real time interaction between your fleet and your dispatch center. Start with our innovative system and progressively add block by block, or choose a comprehensive, world-class array of interactive subsystems to help streamline your operations and maximize efficiency and safety.
OnBoard Server™ (OBS)™
A Trapeze ITS Solution

Help ensure control, safety and accurate, efficient FTA-compliant reporting with real time interaction between your fleet and your control center. Start with our innovative system and progressively add block by block or choose a comprehensive, world-class array of interactive subsystems to help streamline your operations and maximize efficiency and safety.

Driver Command Console (DCC-Direct™)
- Touch panel control
- Bright LCD display, with full-colored VGA
- Single-point log on
- 7 dedicated “smart keys”; unlimited soft keys
- Wireless interconnect available
- Tactile and aural feedback for positive control keyboard
- Windows XP™-based

Technical Specifications
- Windows XP foundation
- Pentium™ class processor
- 30-200 MB hard drive
- Input/output for up to 20 vehicle systems - annunciators, passenger counter, farebox, doors, engine, video, audio, communication control, more

Trapeze TransIT Solutions are a compelling choice from an adaptable, forward-looking menu; begin as minimal or as comprehensive as your fleet requires, then build your system as you advance. Each vehicle compiles large amounts of data for reporting that can be customized to your community and fleet—an absolute necessity for compliance, efficiency and funding.

TransIT Solutions by Trapeze™
TransIT Solutions that link vehicles, operations, customers, staff and management. “End-to-end” enterprise ITS systems help to provide rapid returns on investment by improving service, reducing costs and increasing ridership for many types of transit organizations.

DCC-Pro™
An Alternative, Affordable On-board Option

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www.trapezegroup.com
Product Information

Integrated Vehicle Logic Unit (IVLU)

Improve Fleet Performance and Enhance Driver Interaction

Trapeze ITS’s IVLU (Integrated Vehicle Logic Unit) is a modular on-board computer with the processing power required to control, monitor, record and oversee each vehicle in your mobile fleet. Scalable and flexible, the IVLU allows you to add extra functionality, making it a low risk, high payoff solution. The IVLU is specifically designed for the rugged transit environment.

The Business Case for IVLU

ITS Ready
“Real-time over-the-air” full fleet management for Computer Aided Dispatch (CAD), Automatic Vehicle Location (AVL), ADA Annunciation, APC, video integration, Transit Signal Priority, fare collection and component monitoring.

Single Log-On
Integration of on-board systems with the IVLU enables the driver to log-in to all vehicle equipment at once. The central system verifies the log-on and can take action when required.

Improving Driver Performance
Accurate positioning and navigational tools can help new and existing drivers to navigate their routes any day, any time. The combination of GPS, dead reckoning and map matching makes the IVLU one of the most accurate positioning devices in the industry.

Communications
Open communication platform with full capability for IDE, built-in discrete outputs, high-speed data bus, Ethernet, RS232, RS485, RS422 and SAE J1708/1939 means the Trapeze ITS IVLU meets all your communication requirements from engine monitoring to video security integration.

Real-Time
Integration with multiple voice radio, data radio and Cellular modems allows for real-time updates. Critical real-time data, such as position or an emergency alarm, is transmitted while the bus is in operation over the data radio or cellular networks, while important Business Intelligence and trending data is off-loaded over WLAN at the end of revenue service.

Proven Technology
IVLU technology is supported over several generations with full backward compatibility. There are agencies that utilize up to four generations of the IVLU across their fleet within one CAD/AVL system.

Easy to Install
Low profile hardware is retrofit ready and designed for either horizontal or vertical installations. The IVLU can be exchanged on the spot (hot swapped), and an auto reconfiguration process will enable the replacement IVLU to function properly as soon as it is installed.
Product Information

Integrated Vehicle Logic Unit (IVLU)

IVLU TECHNICAL CHARACTERISTICS

Physical Characteristics
Size: Low Profile; only 244 cubic inches (11.5 × 8.5 × 2.5 inches)
Weight: 3.5 pounds
Mounting Orientation: Horizontal or Vertical

Graphical Interfaces:
DVI (Qty 1) – Custom Type D Connector
LVDS (Qty 1) – Custom Connector
Complete IEGD Support
Dual Clone
Dual Independent Mode
Single Mode

Power
@ 12 VDC (typical)
Operating Range 8 VDC – 16 VDC (IVLU & MDT ONLY)
Embedded Wake Up Timer, SW Configurable
Embedded Shutdown Timer, SW Configurable
Vehicle Voltage Monitoring, Alert and Logging
Power Supply Watchdog Monitoring
Over Voltage Protection with Safety Shutdown
Ignition Sense
Power Distribution for Peripheral Devices

Vehicle Interfaces
Communication Interfaces
• RS232 (Qty 4)
• RS485/SB9600 (Qty 2)
• SAE J1708 (Qty 2)
• SAE J1939 (Qty 3)
• USB 2.0, 2 Type A, 1 Type B
• Integrated 4 port Ethernet Switch –
  10/100 configurable and manageable Level 2 switch
Discrete Inputs – User-Defined, Configurable (Qty 12)
Discrete Outputs – (Qty 9, 6 Voltage Source and 3 Ground Source)
WLAN 802.11 a/b/g
Covert Switch
Odometer
Radio Controls
• Power Control
• Discrete Control

Audio System
Intel High Definition Audio
Audio Outputs
• Radio Voice
• Handset
• Driver Speaker
• Internal Public Address
• External Public Address
Three Independent, Embedded Audio Power Amplifiers
• Driver Speaker, 25W Peak
• Internal Public Address, 25W Peak
• External Public Address, 25W Peak
Audio Inputs
• Radio Voice
• Handset
• Auxiliary (Gooseneck)
• Covert/AGC 1 (Dual Purpose)
• Covert/AGC 2 (Dual Purpose)
• AGC 3

Optional Interfaces
Communication
• GPRS (Voice & Data)
• CDMA
• TDMA
Tire Pressure Monitoring
Dead Reckoning Sensor

Capabilities
Embedded Global Positioning System (GPS)
Embedded Automatic Vehicle Location (AVL)
Vehicle Maintenance Monitoring
Data and Voice Communications (Single or dual radio solutions)
Route and Schedule Adherence Monitoring
Automated Annunciation (ADA compliant)
Automatic Passenger Counting (APC)
Traffic Signal Priority (TSP) for Rapids Bus Transport
Fare Collection
Log in/log out (via MDT, Farebox, or remote Dispatch Log In)
Overt and covert monitoring
You need to provide an ADA annunciation solution to have an accessible system, but you also want to offer them the security, travel info, and entertainment they deserve. With ADA annunciation you can advise passengers of agency news, announce real-time stop requests, announce personal safety messages, points of interest, and have location-based advertising and entertainment streamed right to your vehicle.

**SOLUTIONS FOR YOU**

- Satisfies the needs of all your customers
- Clear, precise announcements
- Announcements triggered by event or location
- Video alternative for richer multi-media display
- High quality aural and visual messaging
- Multi-lingual capability (audio and text)
- Manual canned-message triggering

The NextStop™ Annunciator System allows all this to be streamed to your vehicle at speeds never seen before and at a cost and convenience you won’t be able to refuse.
**THE BUSINESS CASE for a Trapeze ITS Solution**

**Automatic, Location-Based Announcements:**
- Automatically plays messages using time, service type, route, and/or location information. Operator and dispatchers can manually trigger pre-recorded messages.

**Rapid Installation, Seamless Integration:**
- Plug annunciation system into the wireless on-board system in a few hours. Immediately establish real-time communication with fixed end systems.

**Low-risk, Quick Time to value:**
- Solution provides for affordable and cost-effective deployment. Outfit a “smart bus” in a fraction of a day.

**ADA and FTA Compliance:**
- Aural and visual next stop information provides greater accessibility and ensures compliance with ADA and FTA requirements.

**Location-based advertising provides riders with useful information**

**NextStop™ gives you direct time and location**

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**PART OF A TRAPEZE INTELLIGENT TRANSPORTATION SYSTEMS**

Trapeze develops and implements ITS solutions that link vehicles, operations, customers, staff and managers instantly. Our complete, end-to-end enterprise ITS systems ensure rapid return on investment by improving service, reducing costs, and increasing ridership for many kinds of transit organizations.

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