

## TRAINSTAT®

Automated Vehicle Location (AVL) and Passenger Information Management System (PIMS)

### ENSCO's TrainSTAT® Provides Train Status Location Information

- At the station
- On the Internet
- Via pager or cell phone

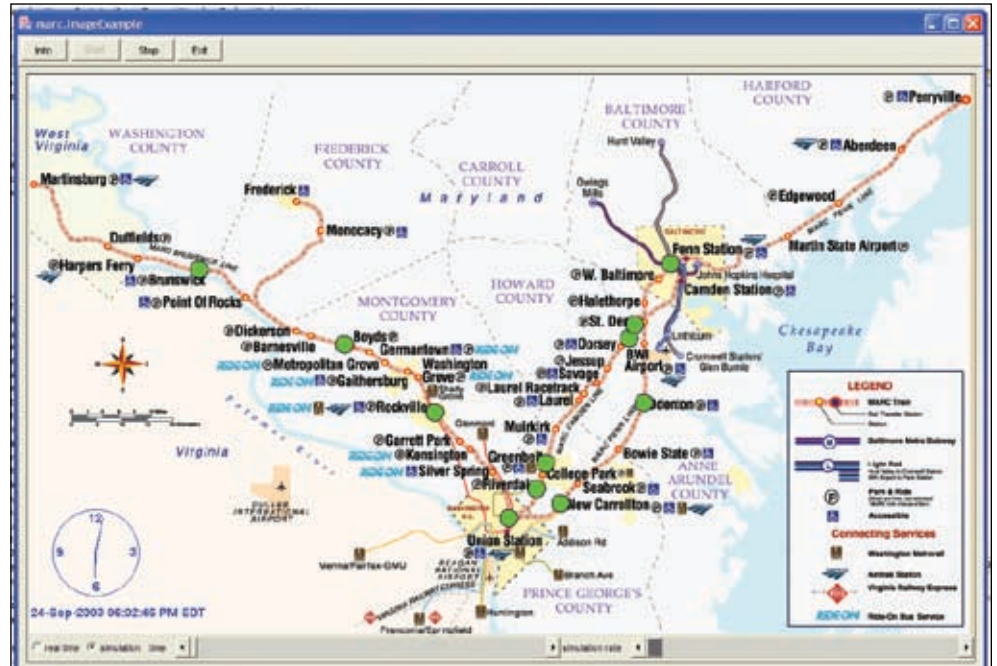
TrainSTAT provides train positioning based on GPS, cellular, wireless messaging and computer maps. TrainSTAT predicts time of arrival at waypoints down the line, updates the train management database tables, and sends the information messages to specified addresses via e-mail, pager and open Internet pages and to display the information to the public at train stations. ENSCO's automated server-based method of determining train schedules, detecting time differences at waypoints and predicting delays at stations enables a multitude of analysis and prediction functions. The basis for these measures is the static schedules and dynamic GPS positions associated with individual vehicles in the particular segments.

### For General Public Users

- Train tracking via simple open Internet connection
- Stylized, easy-to-read map and train status board display of routes, with continually updated train locations
- Email, pager or cell phone notification of train status
- Optional interface to train message signs on station platforms

### For Operators and Railroad Personnel

- Access ENSCO-generated reports over the Internet
- Additional table views and editing functions to allow a trained



Keep passengers informed with quick and accurate train location information.

operator to manage, support and override the train schedule reporting and messaging system

- Large, detailed waypoint database table for service
- Scheduling and train management analysis functions

### Options

- Available as a low cost, stand alone vehicle tracking unit or as an upgrade to ENSCO's Vehicle/Track Interaction Monitoring System
- Train management views and tables for operating department
- ENSCO-based hosting of customer servers
- Technical support, software maintenance and upgrades of ENSCO Track/IT™ software suite

- Email notifications to customers and messages to station platform signs
- Analysis and prediction functions

### Advantages

- Public customer service access is easily provided through open Internet pages as both maps and simple tables.
- Expert and engineering access to operational information is also provided through a secure Web connection.
- System status, control and maintenance, together with all operational aspects, including wireless communication between trains and stations and customer service access, are integrated in one easy-to-operate product.
- Inexpensive to maintain.

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Innovation Starts Here

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- No special infrastructure requirements.
- Databases run on SQL-92 compliant systems.
- Data management, storage and trend reporting are easily supported by ENSCO's Track/IT database management package.
- Report creation and export is automated and requires little user intervention.

these messages are stored in a database. Graphical and tabular interfaces include GIS map and tabular reports. ENSCO will work with the appropriate personnel to develop safety and maintenance procedures to be applied to vehicle-based data in order to identify units and schedule conflicts that cannot be detected or predicted by the server application and scheduling heuristics.

the last 5 years ENSCO has begun the process of strengthening and expanding its software and system integration capabilities, upgrading both staff and resources, to meet its planned expansion of enterprise-class software, systems and services for the commuter railroad industry. In the last year, ENSCO has successfully begun to deploy true enterprise-class products and integration services in the railroad industry, for a number of large rail organizations worldwide.

## Requirements

TrainSTAT requires vehicle tracking units installed on trains and central computers. These units can be, but are not limited to, ENSCO-developed remote monitoring devices, such as ENSCO's VTI Monitor. The units continuously monitor train location and track conditions and report detected events through wireless communications channels to the central computers where

## ENSCO's Experience With Train Monitoring Systems For Commuter Railroads

Since 1998, ENSCO has been developing and maintaining remote train monitoring systems deployed across the United States by organizations including the Federal Railroad Administration, MARC, CALTRANS, and Amtrak for the ACELA in the Northeast Corridor. With this experience, over

ENSCO is a pioneer in Global Positioning System (GPS) train location and speed tracking technology; remote monitoring of cars and locomotives; position and health reporting via wireless communication channels; and Web-based database management and reporting services.

TRAIN STATUS						
<b>Eastbound Brunswick</b>						
Train No.	Next Station	ETA	Status	Delay	Last Update	Message
P870	Washington Union Station	6:20 AM	On Time		4/12/04 6:18 AM	
P890	Silver Spring	6:33 AM	Late	? Min	4/12/04 6:18 AM	
P872	Gaithersburg	6:20 AM	On Time		4/12/04 6:18 AM	
P874	Georgetown	6:57 AM	Late	20 Min	4/12/04 6:18 AM	Cows on track between Point of Rocks and Georgetown
<b>Camden Line Northbound</b>						
Train No.	Next Station	ETA	Status	Delay	Last Update	Message
P840	Laurel	7:09 AM	On Time		4/12/04 7:06 AM	
P842	Washington Union Station	7:07 AM	On Time		4/12/04 7:06 AM	
P844	Gaithersburg	8:05 AM	On Time		4/12/04 7:06 AM	
<b>Penn Line Northbound</b>						
Train No.	Next Station	ETA	Status	Delay	Last Update	Message
412	Baltimore Penn Station	9:14 AM	On Time		4/12/04 9:02 AM	
414	Washington	9:20 AM	On Time		4/12/04 9:02 AM	
416	Washington	10:20 AM	Late	15 Min	4/12/04 9:02 AM	Mechanical problems will delay the start of this train
418	Washington	Cancelled	Cancelled		4/12/04 9:02 AM	Cancelled