

VigilVanguardTM

White Paper

Real World Training for Transit Operators

vigil
solutions

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EXECUTIVE SUMMARY

As professional drivers, bus operators are held to a higher standard. They are expected to have the skills and knowledge to travel on busy city streets or quiet residential areas — **safely**. Changing traffic conditions and the unexpected actions of other drivers can make that a challenging task.

Since most driving accidents are caused by driver error; increasing a person's skill set will deliver the greatest impact on the frequency of accidents. The most effective means of learning and advancing a skill involves a process of identification, practice, evaluation and feedback.

This is the exact course promoted by Vigil technology. While using the equipment on public roads, VigilVanguard will provide a realistic, undisputable evaluation of driver performance along with a consistent, well-defined path for improvement.

Drivers are able to identify behaviors by watching themselves in action. Appropriate responses to the actions of other drivers and environmental hazards become second nature. Our training system enriches and amplifies the learning experience to effect a positive change in behavior.

It's not just a matter of reducing risk — it's about ensuring a safe, comfortable ride for everyone.



Figure 1 - VigilVanguard Equipment Set Up

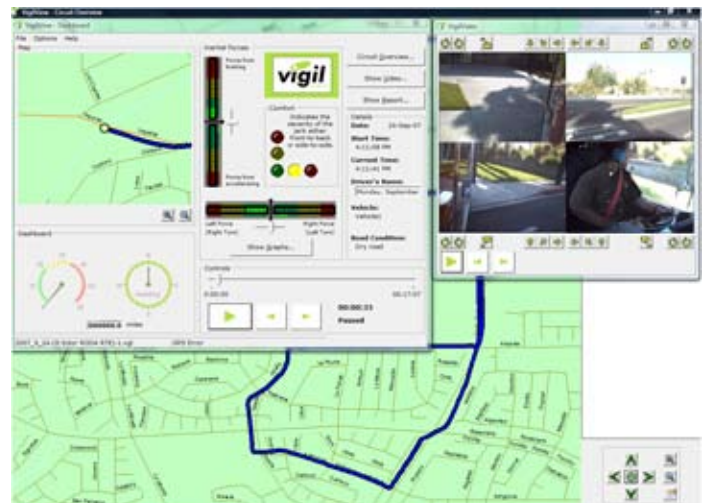


Figure 2 - Dashboard, Video, Circuit Overview

THE VIGILVANGUARD PROCESS

The VigilVanguard On-road Training System uses an integrated method that starts with the identification of an unsafe act or skill deficiency. To correct this problem, the individual is guided through a learning, evaluation, and feedback process.

In this environment, operators can develop the vision and skills needed to maneuver any vehicle safely in traffic under stressful conditions.

The system is compact, portable, and adaptable to standard buses, artics, or any other vehicle including maintenance or supervisory sedans or trucks. This characteristic also allows you to bring training to the individual when there is more than one division - rather than making the driver come to you.

Having the ability to train on your vehicles driving the roads you travel is more effective while saving time and money.

How It Works

The central component of the VigilVanguard system is a Tablet PC which is connected to four video cameras, a GPS and a dynamic motion sensor.

Quick-release hardware is used to mount the rugged cameras both inside and outside the vehicle. Once familiar with the equipment, an instructor can set up the system for training in less than 15 minutes.

VigilVanguard is a portable tool that records the details (including video) of a drive. To begin the evaluation, the instructor taps on the **START** button triggering the PC to begin recording. Video is captured from various perspectives depending on the camera angles.

Data generated by the GPS and sensor unit is also automatically recorded while customizable forms allow instructors to easily save notes based on their own expert observation. In addition, driving events can be bookmarked with a single tap on the computer screen.

These events and other information are automatically integrated into a driving report, customized for the organization, and can be uploaded to the driver performance database. With VigilVanguard's advanced technology acceleration, braking, cornering, passenger comfort and speed can accurately be measured during the evaluation.

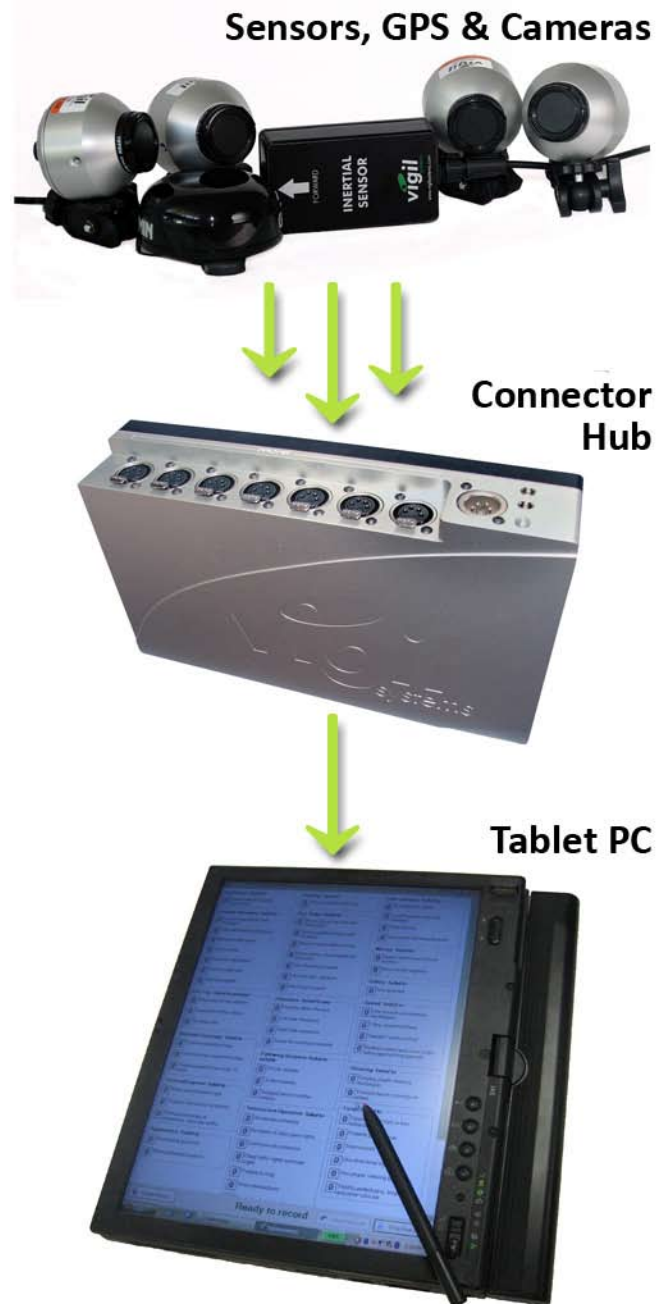


Figure 3 - VigilVanguard System Diagram

VIGILVANGUARD FEATURES

To highlight the unique technology and possibilities of this system, a few of VigilVanguard's vast array of features are listed here.

Automatic Detection of Driving Habits

VigilVanguard detects harsh braking/cornering and accelerating allowing the instructor to talk through these events with the driver. Additionally, driving speeds can be overlaid on the map to back up instructor observations with objective data.

Comfort Score

VigilVanguard has the ability to calculate various comfort scores. Based on the harsh braking/cornering and acceleration, three scores are generated. VigilVanguard gives the operator an overall score as well as a braking and cornering score.

A solid assessment can be formulated concerning an operator's ability to safely operate the bus, including their "Eco-driving" skills, based on these scores.

Drive Reviews / Debriefs

After the drive, a recommended debrief session is held. The session begins with a review of the automatically generated report (see section below **Time-Saving, Professional Reports**) which includes observed behaviors and notes made by the instructor about specific actions. The instructor talks through each item on the report, using *VigilView* feedback software.

The operator is able to observe their behavior and the captured data concerning speed, cornering, etc. using *VigilView*. The operator is asked to determine the correct action for marked events. Once the right action is discussed, the operator "owns" the solution and is much more likely to change their behavior.

Vigil provides train-the-trainer sessions to ensure the organization's instructors are effectively using the software and data to present a consistent message.



Figure 4 - VigilVanguard Review/Debrief

Time-Saving, Professional Reports

At the end of the evaluation, VigilVanguard generates a comprehensive report including video, motion data and instructor input via the forms. Sitting down with the student, an instructor reviews the ride drawing upon the actual data — including a visual picture to verify their behavior and actions.

The data then becomes a permanent record to help track both the individual, as well as the division or agency's performance. Having a collective database assists in the benchmarking, budgeting and planning process.

VigilVanguard is unique in its portability and real-world training emphasis.



Figure 5 - VigilVanguard Video Recording

OPTION: Following Distance/Lane Keeping Module

This option allows VigilVanguard to maintain a record of following distance data in addition to detecting a failure to use appropriate turn signals when changing lanes. Again, this objective feedback allows the driver to see and understand what they did correctly, and what actions need to be changed.

OPTION: Fuel Economy Module

Saving fuel through better driving habits can significantly reduce the amount of money spent on fuel. An optional module for VigilVanguard allows fuel use during a drive to be captured and reviewed later with the driver. This unbiased data when combined with recognized 'Eco-driving' training techniques can help motivate behavioral changes that can result in better fuel economy. See the 'Vigil Fuel Economy' Whitepaper for further details.

Figure 6: VigilVanguard Drive Report

	Trip Details	
	Drive 1	Drive 2
Distance	12.1 Miles	12 Miles
Trip Time	0.8 Hours	0.82 Hours
Total Fuel Use	2.6 Gallons	2.1 Gallons
Fuel Economy	4.7 Miles per Gallon	5.7 Miles per Gallon
Average Fuel Rate	3.2 Gallons per Hour	2.56 Gallons per Hour
Maximum RPM	2394 RPM	2212 RPM
% Idle Time	8.2%	7.0%
Maximum Speed	45 MPH	44MPH
Average Speed	15MPH	15MPH
Fuel Rate Change		20% Less Fuel
Fuel Economy Change		21% Improvement
Dollars Saved for this trip		\$1.10

BENEFITS – MOTIVATING POSITIVE CHANGE

The most powerful benefit from using VigilVanguard to train drivers is the way it motivates positive change, resulting in a reduction in risky behaviors and fewer accidents within the organization. Organizations taking this approach have seen accidents reduced by 76 percent.

Management benefits from the reduced personal and financial costs of accidents. VigilVanguard can be integrated with other Vigil management tools along with already established systems to provide complete oversight of risk, training and liability management.

Personnel/HR/Risk Managers benefit from the permanent, transparent, easily accessible training records. Using an advanced technology approach such as this can reduce insurance premiums. When integrated with Vigil’s management tools, data collated can be mined to isolate and address an organizations most common and important issues.

Depot Managers benefit from receiving better trained, more efficient drivers. Managers can also review captured recordings to help manage their drivers.

Training Managers benefit from the efficiency of the technology combined with the Core Skills. They can also track the quality and consistency of instructor training and evaluations. Their instructors are more productive spending less time on paperwork and more time training.

Driver Trainers benefit as from having a powerful, objective tool to provide feedback to drivers. This makes their job easier and less stressful. Also the reporting feature saves time, allowing instructors to spend more time doing what they do best (and what they usually enjoy most) – training drivers.

Drivers benefit from being able to watch themselves in action. Training is not just an Instructor giving their opinion about the student’s actions; the individual can see exactly what they were doing. Their driving will also be smoother, resulting in happier passengers. By providing such high-quality training, organizations are demonstrating how valuable their drivers are, fostering a sense of worth – further motivating them to do their jobs well.



Figure 7 - VigilVanguard Report



**Unique Technology
Proven Effectiveness**

ADMINISTRATION FUNCTIONALITY

Instructors use VigilVanguard to capture and document the level of competency achieved on by experienced and new operators. With the system, a record of an individuals driving habits and actions can be compiled so that improvements as well as "red flags" can be recognized.

VigilVanguard provides an unlimited capability for review and playback of the evaluation. Since drivers can actually see themselves in action, individuals receive compelling, unbiased feedback on their performance.

Significant areas of driver performance can be isolated, reviewed and corrected, advancing the skill set of the individual and thereby increasing the overall safety record of the agency.

The system also improves productivity by automating the report and record-keeping process. When combined with VigilManager, these records become an infinite source of data for planning, performance benchmarking and instructional exhibits.

Automation of the paperwork also means instructors can spend more time doing what they do best: **training people.**

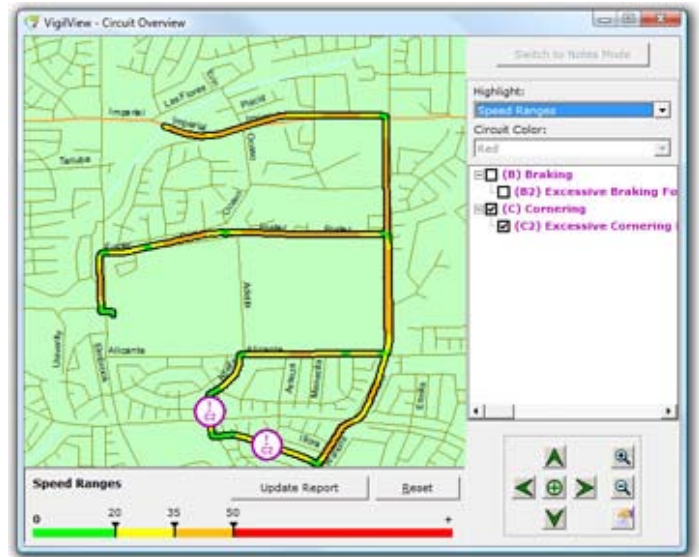


Figure 8 - VigilVanguard Circuit Overview

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