



GPS System Developments

As promised at last year's conference, the first phase of integrating the EduTracker GPS/AVL system with the Edulog routing and scheduling system has been successfully completed. Several Edulog clients have fully-implemented systems that track the district's entire fleet, and the results validate our value-added approach to transportation management. Thanks to your help, not only is Edulog the only company with all the required pieces (routing and scheduling software, GPS/AVL software, and GPS/AVL hardware) for an integrated GPS solution, we are also the only firm to successfully demonstrate comparative analysis of planned vs. actual routing data and the use of GPS to automatically calibrate bus stop times.

As many of you know, comparative analysis is the process of automatically importing Edulog routing data into EduTracker. With this capability, you can see much more than just the location of buses—you can tell which buses are running early or late and determine when a bus either skips a stop or makes an unscheduled stop. EduTracker allows you to manage by exception and focus attention only on unplanned or unexpected situations.

With EduTracker Stop Editor, much of the tedious but necessary work of editing times at bus stops can be eliminated. As a bus makes a run, EduTracker automatically records and stores the actual time at each stop, which might vary considerably from

the stop time stored in the routing and scheduling system. With Stop Editor, all that's needed to update your planned routing data is to select any or all of the stop times recorded by EduTracker. The system will then automatically pass those times to the routing and scheduling system. This not only effortlessly increases the accuracy of your Edulog system, it also makes optimization that much easier to accomplish. Stop Editor can also validate the exact location of bus stops and eliminate the inaccuracy inherent in all mapping systems based on proportional positioning along an address range.

Now that the comparative analysis and Stop Editor functions are complete, we will be further enhancing the interactivity between EduTracker and the routing and scheduling software (Edulog^{nt}, ntASP, and ePTS). At this year's conference, EduTracker Run Editor will be unveiled. As one of the exciting capabilities of this new product, Run Editor lets you automatically replace or create the planned stop sequences of a run with the actual sequencing of stops recorded by the GPS/AVL.

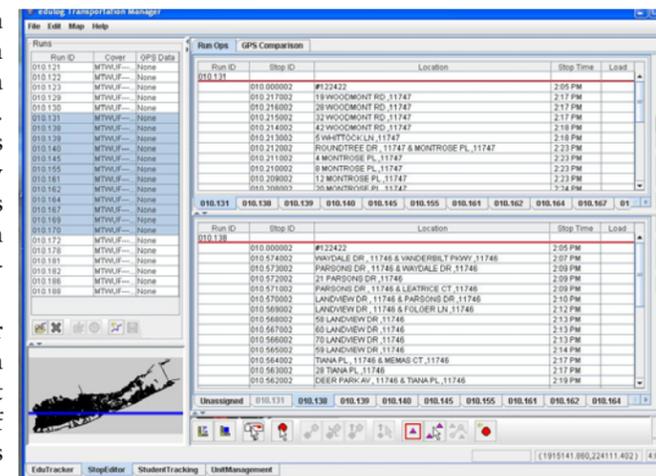
This achievement is another milestone in our goal of transforming routing management systems and making the vision of GPS-based routing a reality. Recording when and where students enter and leave a bus is another fundamental capability of EduTracker,

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2007–2008 EDULOG Conferences

Confirmed:

**Atlantic City, NJ
May 14-15, 2007**

Atlantic City Hilton Casino Resort
Boston and the Boardwalk
Atlantic City, NJ 08404
Phone: 1-800-257-8677
Room Block: \$100/nt refer to Edulog

**Indianapolis, Indiana
July 16-17, 2007**

Crowne Plaza Hotel
123 West Louisiana Street
Indianapolis, Indiana 46225
Phone: 317-631-2221
Fax: 317-236-7474
Room Block: \$99.00/nt refer to Edulog

Tentative:

**EDULOG Annual Conference 2008
March 30 – April 2, 2008**

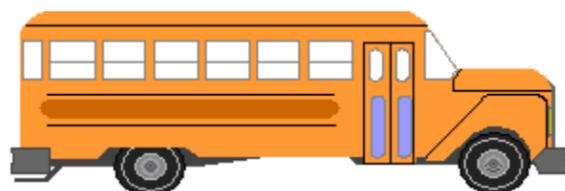
Las Vegas, NV

**Missoula, Montana
October 29-30, 2007**

Holiday Inn – Parkside
200 South Pattee Street
Missoula, Montana 59802
Phone: 406-721-8550
Fax: 406-728-3472
Room Block: \$84.00/nt refer to Edulog

**Nashville, TN
December 3-4, 2007**

Double Tree Hotel
315 4th Avenue North
Nashville, TN 37219
Phone: 615-747-4802
Fax: 615-747-4815
Room Block: \$99.00/nt refer to Edulog



Find up to date info at www.edulog.com/events.html

Improving Transportation Efficiency

School districts have a vested interest in transporting their students in a safe, timely, and cost-efficient manner. In many cases school administrators and transportation directors are not fully aware of the tools, technology, and management processes that may be of value to their transportation operation. Striving for cost-efficiency in a time of restrictive budgets, and expanding operating costs is paramount. We can help educate personnel on the different methods available using the Edulog's Total Solution Provider approach.

Management Processes

Transportation Operational Assessment: A senior staff member is on-site and conducts individual interviews, group meetings, and observations of the operation in real time and searches for the processes that are not working as well as they could. The focus is far reaching; with attention paid to individuals and groups that make up departments or divisions. We also look at the transportation data, hardware, field trips, and the fleet maintenance systems.

Policy Changes

Using the Edulog tools, we can analyze the efficiency of your transportation and planning systems, then make the necessary changes. Such policy changes can be wide-spread and may include consolidating stops, adjusting school bell times, and changing boundary perimeters, to mention a few. Each of these changes carries a cost and benefit. Edulog provides all the tools needed to evaluate the costs and benefits in a timely manner, then implement the solution.

We can consolidate stops in many ways, based on the needs of your district. You may want to explore moving all of the district stops that are not home-based to the nearest safe corner. This not only reduces the number of stops, but also decreases loading time and the total time required to complete affected routes. This typically lowers the total miles traveled, as well as fuel and vehicle service expenses.

We can adjust school bell times based on limits acceptable to your district. This may allow you to reduce the number of bus routes required to transport your students. Moving bell times by just five

to fifteen minutes can yield impressive results. Of course, there is a cost in adjusting bell times as well, but having this analysis will allow you to make an informed decision.

Boundary changes can take on multiple dimensions, but changing the walking distance limits can have the largest impact on efficiency. Modifying boundaries and calculating the student population is the first step in this process. Using our software that integrates transportation and planning into a single system, we can apply boundary changes directly to the routing data.

Transportation Changes

When examining current runs to improve efficiency, we often categorize changes into two levels: low-impact changes, and large-impact changes. This impact applies to both the transportation staff and the clients they serve. An example of a low-impact change would be to resequence the stops that a vehicle services. Over time, stop additions and deletions mount up, but stop sequences aren't always re-evaluated when routes are modified. We can resequence stops based on street speeds, travel directions and restrictions to reduce route times and mileages. We consider this a low-impact change, since the routes are servicing the same stops.

Larger-impact changes include these stop sequence improvements, but we also examine whether stops would be better on different routes. We can create routes that service the stops more efficiently, taking into account stop loads, vehicle capacities, and time considerations. This can significantly reduce the time, mileage, and even the number of vehicles required. This is a larger-scale type of change, since a bus may stop at different locations and take a different path. This can also impact clients and parents, since the student's stop and bus may change.

We can also enhance the use of your fleet by maximizing the use of individual vehicles, allowing you to use fewer vehicles. You can create very efficient bus routes if you can make vehicles sit or travel less. This also allows you to take full advantage of the new school bell times and create more efficient, multiple-

tiered routes. If you have made either low-impact or larger-impact changes to runs, those changes can also create a better routing scenario. You can complete all of these tasks with Edulog's integrated system.

Timing Optimization

Properly optimized routes have the immediate effect of reducing time spent making manual adjustments, particularly during the first part of a school year. At the basic level, optimized routing improves time capacity, which is the most complex variable in transportation planning. Both Time Optimization and Capacity Optimization (discussed later) are greatly enhanced through AVL, or "GPS Rich," data. You'll find that this real-time information will be invaluable in accomplishing all the objectives mentioned here.

We define time capacity as the time available to complete a given route versus the time it actually takes (including stops, idling, boarding/exiting, deadheads, and traffic delays). Route coupling optimization backed by real-world data from AVL systems allows transportation planners to increase time capacity.

Over-capacity situations (buses arriving late for school) are usually corrected as best as can be, but identifying unproductive time on a route is difficult to impossible without AVL-supplied data. With AVL information, you can determine whether a bus sits five minutes or thirty minutes between runs and if buses are stopped along a route because they are ahead of schedule. Obviously, when too much time is allocated to a run, there is excess capacity. This is wasteful in terms of driver pay, fuel expenses, and opportunity costs. Drivers who are paid by the hour may have little reason to mention these conditions to planners, so AVL data may be the only way to identify this excess time capacity.

If you could use this excess time to form more optimized routes, the savings can be substantial. Suppose that, through the use of AVL data and optimization software, you determine that a district with a 300-route busing plan can consolidate them into 285 new routes. This would reduce vehicle and driver requirements

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Edulog's New Web Site

We're pleased to announce that we are starting development on the new design of our Web site, located at www.edulog.com. This new design will enable clients and prospective clients to find information with greater speed and efficiency.

These improvements include more innovative search tools, an updated client forum, a new look and layout, more links and easier navigation tools. Some of these new features are already in place and the others will be added over the coming months.

Regularly updating our Web site does more than just keep our users in-touch and continually coming back. It also entices search engines to visit the Web site more often for indexing purposes. If they know that the content is constantly changing and is relevant to particular topics, they will check the Web site regularly for key search words.

We looked at a variety of factors when considering the changes to our Web site.

Designer – We looked for a designer with all the necessary Web site implementation skills, including cosmetic and programming design expertise, business knowledge, and site placement experience. This designer also needed to understand Edulog and the transportation industry. We decided to keep the work internal to address all these needs.

Content – We then looked at content. Did we have something new to tell our clients and prospective clients? We've attracted people to our site, now how do we keep them interested? This was critical in deciding on the new design.

Search engines – Many sites are attractive but are difficult to find. Visitors usually don't go through more than three or four screens of search results to find a potential supplier. When we performed a Google search on the phrase "Routing Software," Edulog did *not* come up in the first few screens.

Layout – Our site needs to be informative and compelling. An attractive site interests viewers, making them want to see more. The layout allows the viewer



to quickly understand the site's mission. Most users scan rather than read, so we organized our content into easy-to-read segments with headings and sub-headings.

Ease of Navigation – We needed to design the navigational structure with the content and the intended audience in mind. Our viewer should be able to navigate to a desired location within two or three clicks. We will include new links to products, services, people, feedback and the site's main sections.

Creativity – We know that it is exciting to find a site that has something new and dares to be different.

Extra Features – We will enhance our site with forms, bulletin boards, search engines, helpful links, possible foreign language areas, download and upload features, and much more.

Industry Expertise – Many helpful recommendations have contributed to the new features and new Web site design.

Edulog Products – Our site will include the new and refined product line that has made Edulog an industry leader for the past 30 years. These include our Edulog transportation software with integrated Web products and optimization features, as well as our EduTracker product line featuring GPS technology and stop and run editors. ePTS has also evolved into a very viable solution for smaller districts. Field Trip and Fleet Pro are perfect additions that help make Edulog the total solution provider.

Services – The different levels of ASP services for Edulog and ePTS give our clients the option to choose how involved they want our dedicated staff to be in the day-to-day operation of their routing system. Our mapping services provide an excellent resource in ensuring that geographical data is incorporated into every solution we provide. Demographic and transportation consulting services give our clients the piece of mind necessary to make intelligent planning decisions.

Be on the lookout for the new and approved www.edulog.com.

"GPS System" continued from page 1

and our student tracking system now includes RFID and MDT (mobile data terminal) functions. As with GPS/AVL, the value of a student tracking system can be exponentially increased when it is integrated with planned routing data. Rather than simply tracking which students board and exit the bus, you can compare this information with a list of students assigned to any bus stop. With EduTracker, you will know instantly when a student has exited at an unassigned stop and drivers will know when someone boards a bus who isn't supposed to.

As a true dispatch tool, EduTracker increases your ability to manage phone calls from parents and tell them with detailed accuracy where their child is located, if/when they were picked up or dropped off at their assigned or unassigned stop, and exactly what time this occurred. EduTracker student tracking also increases your strategic planning abilities by telling you how many students actually ride the bus compared to the total number eligible for transportation, or assigned to certain stops.

EduLog is also the first when it comes to real-time, two-way data communication

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by five percent. Based on an average annual operating cost of \$35,000 per bus, the immediate operational savings in the first year would be \$525,000. In addition, future reductions in capital costs would accrue because there would be a decreased need for replacement vehicles.

Capacity Optimization

Route timing is a complex problem that AVL data can help solve, but you can also combine AVL technology with student tracking systems to optimize rider capacity.

Without a real-time student tracking capability, transportation departments can use their routing and scheduling software to find out which students are assigned to each bus, but they have no knowledge of who is actually on any given bus. Districts often don't transport all the assigned students because many of them walk, ride bikes, get taken to

between the transportation office and buses on the road. Through our integration of the student tracking system with planned routing data, transportation and student information can be sent out to each bus and displayed on an MDT which the driver can then use to send data back to the base station. The EduLog MDT solution is especially effective for tracking special needs students: the driver can simply push a button to record whether or not a child was picked up or dropped off—and if not, select from a list of reasons why. Future MDT enhancements will include the ability to



display run directions, color moving maps, student photographs, and more to the driver—all especially useful for frequently changing bus runs and/or substi-

school by parents, or are at home sick.

Routers are aware of this underload, but it is difficult to make policy decisions regarding students assignments without specific ridership data. AVL systems that include student tracking functions can accurately determine how many students are on any given bus. Some tracking systems simply count the number of passengers, while others can identify which students are on which bus through the use of electronic bus passes or other recognition technology. In either case, you can use real-time passenger loads to make service adjustments "on-the-fly." For example, you could direct a route with an unusually small passenger load to pick up the final few stops for a bus that has been delayed.

But it is the comparative analysis of planned versus actual data where you can achieve the greatest cost savings. You can analyze reports to compare and contrast one or any number of bus runs for

tute drivers.

We've also recently begun installing an effective, affordable solution that requires only a cell phone for GPS/AVL tracking which is fully-integrated with planned routing data. In comparison to other cell phone offerings that have only "standalone" GPS without management capabilities, the EduLog solution will allow you to perform comparative analysis with your planned routing data. Because cell phone costs are constantly decreasing, we believe that this option will make GPS/AVL tracking and management affordable to almost all of our clients, and dramatically increase school districts' understanding of the value of a cell phone based GPS solution.

We've come a long ways in the few years since we introduced GPS/AVL functions, and much of the credit for this success rightfully goes to our clients. You are the ones who took the time to tell us of your dreams, expectations, and realities. You encouraged us when we did things right, and put in the hard work to help us when we were

wrong. And with your continued assistance, next year's conference will certainly bring even more features and benefits to the EduLog community.

deviations, then reconfigure them to reduce excess rider capacity.

It is also possible using student tracking to intentionally assign more students to a bus than that bus has seats. As an example, suppose a bus has an assigned ridership of 52 students (the maximum capacity), but averages only 30. It has never carried more than 42 and has exceeded 38 only twice in the past two months. An acceptable amount of excess capacity might be ten students (52 minus 42). This would allow you to assign ten more students to the bus, provided the new stops don't make the run longer than its allotted time. As with timing optimization, reassigning students can decrease the number of buses required or allow for the use of smaller vehicles. In this time of budget reductions, driver shortages, and increased student populations, optimizing bus capacity should be a required business plan for all school districts.

Meet Edulog's Staff – Bill Swendsen

What is your title at Edulog?

I'm Senior Account Manager.

What brought you to Edulog?

After my career with Laidlaw ended with an early retirement, I missed the school bus business after a year or so. I came to Missoula several years ago in November of 1995 to Manage Laidlaw Planning Solutions. It was housed in the rear portion of Edulog's building at that time. I have always believed that Edulog was a great product and, after talking to Hien, returned to Edulog. I now have been focusing on the roll out of the GPS EduTracker software and traveling to our customers to listen to their wants and concerns, then bringing those ideas back to Edulog to enhance our products. The customer knows what they want and I bring those ideas to Edulog to make it an even better product line.

How long have you been in the transportation/GPS industry?

I've been in the transportation industry since 1969. I started in the trucking industry with UPS. I moved to the motor coach industry and was Director of Operations for Gray Line of Ft. Lauderdale when I moved to the school bus industry (Laidlaw) in 1990. My first position with Laidlaw was a Branch Manager for the Hudson, WI location.

What is your background in the industry?

While at UPS I was in various departments starting as a delivery driver in Red Hook, NY. I worked my way up through various manager positions, including Industrial Engineering, Safety Training, Branch Manager, Labor Negotiations and Special Assignments in several expansions in the United States. At Gray Line, I again started as a driver, worked up to Director of Operations in Fort Lauderdale, which included the cruise ship transfers, airport transfers, and the general tour business. At Laidlaw I started as a branch Manager in Hudson, Wisconsin, then moved to Branch Manager in Bartonville (Peoria), Illinois, then Area Manager for Central Illinois, and finally General Manager of the LPS operation in Missoula.

What is your specialty?

My specialty is the routing and planning business in all of my past positions. From the opening of new territories at UPS to the challenges like Super Bowl XXIII at Gray Line and the challenges of moving students in the safest and most cost effective manner, I strive to find new and innovative ways to accomplish the tasks of routing and planning.

How have things changed throughout the years in this business?

When I first started in the school bus end of my career, computer routing was just really becoming a standard in the industry. The major and about the only player in the industry was Edulog. Joe O'Dell

actually trained me at one of the early Laidlaw installations in Bartonville, Illinois. The industry has now changed to bring the real world information (GPS/AVL and Student Tracking) into the planning world. I eventually see the real world information being our planning tool and database.

What is the most important information a district should consider when looking for a GPS solution?

Do not make a fast decision when purchasing. Evaluate what you need now, what you will need in the future, then look at the providers in the market. Look at the means of communications and the importance of two-way communication. Evaluate the cell versus radio solution thoroughly. Understand the size of the band width, or "pipeline," is much smaller with radio, and it will limit your system's capabilities and expansion in the future, even if it is initially a bit cheaper with no monthly fees. There is no one solution for all school districts. The software needs to be customized to what you want to accomplish with the system. Evaluate all solutions, and educate yourself to ask the right questions of all vendors so you get the complete picture of what is available. This is a new and changing technology, and several companies will tell you what you want to hear. You need to ask the right questions, which you can only do if you educate yourself on the technology first.

Edulog – The Next Generation Database

Edulog developers are hard at work on a new version of Edulog designed to work with a relational database management system. What will this mean for our users? Here's a short summary of what you can expect from these changes.

Edulog's current back-end data files will be replaced by a Microsoft SQL Server 2005 database. This means our customers will get all the benefits of using this advanced database system.

While day to day users might not immediately notice the changes in Edulog, there will be many "under the hood" improvements. With SQL Server

2005, Edulog clients will be getting a robust, secure and scalable data storage system that is used in mission-critical applications around the world.

In addition, users will be able to take advantage of all the management tools designed to work with SQL Server. This includes advanced utilities for backing up, restoring, and recovering data files. SQL Server's transaction logs enable unprecedented flexibility when it comes to those tasks. Ensuring the integrity of your critical transportation data has never been easier.

The new version of Edulog will introduce some changes to Edulog's current

design. Structurally, all data will be stored in a single database, so there will be no need of a separate reporting database. This will reduce the number of maintenance programs that have been needed in the past.

Speaking of reports, users will also benefit from the move to SQL Server because they will have access to alternate reporting packages designed to work with SQL Server. This will allow you to analyze the transportation data as never before.

We are sure our clients will be pleased with the many improvements this new version of Edulog will provide.

Learning from the Daylight Savings Time Change

By the time you read this article, the jitters caused by the changes to the starting and ending dates of Daylight Savings Time will have passed (we hope). One aspect that this event puts into high relief is the necessity to keep server and workstation operating systems patched to the most current level.

Those of you with older operating systems – Windows 98, Windows NT, and even Windows 2000 – either had to pay Microsoft the \$4000 fee or find another work around (except for you lucky people in Arizona).

Many other programs were affected as well: mail servers like Microsoft Exchange and others, CRM software, and so on. Fortunately, the school transportation industry is not in a time-critical business like financial industries where the consequences of not changing the time accurately could be very costly. Still, it is

important that we all work on up-to-date, completely supported hardware and software.



Of course, the Edulog transportation software was not affected by these changes. Like most programs, Edulog gets its data and time information from

the operating system of the machine that hosts it.

Whenever we talk about patching and updating operating systems and programs, another topic springs to mind. That is the necessity of good, well-executed backup strategies and disaster recovery plans.

At minimum, you should have a backup strategy that 1) allows you to restore your Edulog server from bare metal quickly and, 2) backs up your Edulog data daily and keeps a monthly copy of everything off-site.

Disaster recovery plans can take many forms. What is important is that it meet the criteria set by your school district. If you have any questions about this topic or any others related to the area of hardware or operating systems, please contact Edulog Hardware Consulting.

Top 10 Support Questions

These are the top 10 questions most commonly asked of our Software Support Center.

1. I received a "Run failed, not enough allocated memory" error when auto-generating driver directions in Runs > Graphical.

This indicates bad mapseg files in the \Elt\Live\Server\Dyn folder. Call Edulog Support for assistance in rebuilding these files or restoring them from a backup and running geographic maintenance.

2. I received a "No records found" error after running most Edulog reports.

Run the Dumpall utility in EMU to update the report tables.

3. When performing a new workstation installation on an XP machine, I received the error "Unable to establish connection to the server."

If anyone has installed service pack 2 for Windows XP, you may need a registry edit fix for this workstation. Call Edulog Support for help with installing this fix.

4. I received the error message "Cannot locate Microsoft visual FoxPro library" when trying to start Edulog Reports.

You will need to rerun the Visual Fox-Pro 8 runtime installation.

5. In which folder do I need to place the student download file for the 10.5 upgrade?

You need to place that file in the Elt\Live\Server\Dyn folder (or replace "Live" with whichever data area you are working with).

6. I'm getting a "synchronization" error when trying to start Edulog.

This error is due to mismatched files in the \Elt\Server\Dyn folder. This typically occurs after restoring the incorrect version of a file from a backup. To correct this problem, you first need to get the Updatetimestamps.exe and Updatealltimestamps.exe files. Place them in the \Elt\Exe\Emu folder, then create and run a batch process for the Updatealltimestamps utility. You may need to add an entry for this utility to the Utils.inf file in that same folder. You may also need to run Diagnose and correct any problems found after running this utility.

7. When logging into Edulog, I get the error "Cannot locate the following folders: OPT, RPT, RTE, SRO, SIM, TMP."

Double-check to make sure that the folders exist and that their locations are listed correctly in the Eltransservice.cfg file (or Edulognt.cfg in Elt\Live\Server for version 10.5).

8. I received an error indicating that the Microsoft Jet Database cannot open Autostreets.mdb.

This message indicates that the Autostreets.mdb file is already opened exclusively by another user or that you need specific permissions to open it. This is usually a permissions issue with the mapped Elt or Users folder on the server. Your tech may need to take a look at this.

9. When trying to create a stop, run or route and confirming it, I get the error "unable to confirm, file is full."

This indicates that the indicated file is full. You will need to run a batch file called Extendfile.bat in the Elt\Exe\Emu folder. Call Edulog Support for assistance with this.

10. When logging into Edulog you get the error "Error loading gis, workspace will not be created."

This could indicate one of several things:

a) If this is only on a workstation, it could be a bad gisusername or computer name or a missing workspace file. Please call Edulog Support for assistance with this.

b) If this is also occurring on the server, you will need to run the ElSettingsEditor program (you may need to create a batch file for this) to make sure the IP address is that of the server or the Microsoft default, 127.0.0.1.