Volume 6, Number 4
July/August/September 2006

Intelligent Transportation Society
ROCKY MOUNTAIN CHAPTER

IN THIS ISSUE

Message from the President

Welcome to the Fall newsletter of the ITS Rocky Mountain Chapter. There is fresh snow on the mountains, the remaining fall leaves are fading fast and what better time to deliver a new ITS Rocky Mountain e-newsletter to your inbox.

This edition of the newsletter includes articles on ITS operations and maintenance programs, as well as a wrap-up of news and events in the region. We have feature articles on Idaho's efforts to introduce Advanced Public Transportation Systems (APTS) throughout the state and Winter Operations and Maintenance challenges in Utah. Both articles represent some of the best and most practical experience available for deployment in the nation. I encourage you to take valuable lessons from them.

We have begun work on planning a training workshop in New Mexico for 2007 and I have been working with the ITSA State Chapter's Council to bring the VII Roadshow through the region next year. We will provide updates as they are available. If you have any questions, please contact me.

The mission of the Rocky Mountain Chapter is to "develop partners for the effective deployment of ITS across all surface transportation modes, thus providing a viable and sustainable system for the Rocky Mountain Region that will benefit all users."

Finally, we would like all members to become involved in the chapter and help get the word out about the quality of work being done in our region. Please phone or email any comments, suggestions and opportunities to me or to our Chapter web site www.itsrm.org.

Richard Hodges, ChapterPresident
(richardhodges@richardhodges.com)

Intelligent Transportation Society
ROCKY MOUNTAIN CHAPTER

MEMBERSHIP

Ada County Highway District
Alliance for Transportation Research
City and County of Denver
Daktronics, Inc.
David Evans & Associates, Inc.
Douglas County Public Works
Federal Highway Administration
Frankie Friend & Associates
GE Multilin, Lentronics
Hodges Transportation Consulting, LLC
Idaho State University
Idaho Transportation Department
IDT Group, Inc.
Iteris, Inc.
Kimely-Horn and Associates, Inc.
Meridian Environmental Technology
Montana Dept .of Transportation
Project Engineering Consultants, Ltd.
R&S Consulting
Short-Elliott-Hendrickson, Inc.
Skyline Products, Inc.
ThomTech Design, Inc.
University of Utah, Traffic Lab
University of Wyoming
URS Corporation
Utah Department of Transportation
Utah Transit Authority
Western Transportation Institute
Wyoming Dept. of Transportation

Submit an Article...

You can submit an article for publication in the ITS Rocky Mountain Newsletter! Articles must be no more than 3 pages in length and must contain contact information for the author. While any article may be submitted, publication priority will be given to articles that match the respective Newsletter's theme. Graphics and photos are welcome!

2006/2007 submission deadlines are as follows:

October/November/December 2006 - This issue will include a recap of the annual meeting. No articles will be accepted.

January/February/March 2007 - January 19th. Theme: Old Man Winter versus Transportation - Road/Weather Issues in the Rockies.

April/May/June 2007 - April 20th. Theme: Communications.

July/August/September 2007 - July 20th. Theme: Incident Management and Homeland Security

October/November/December 2007 - October 19th. Theme pending...

Job Announcements

If you would like an ad placed in the ITS Rocky Mountain Newsletter and/or the ITS Rocky Mountain website please email employment@itsrm.org.

Transportation in the Rockies

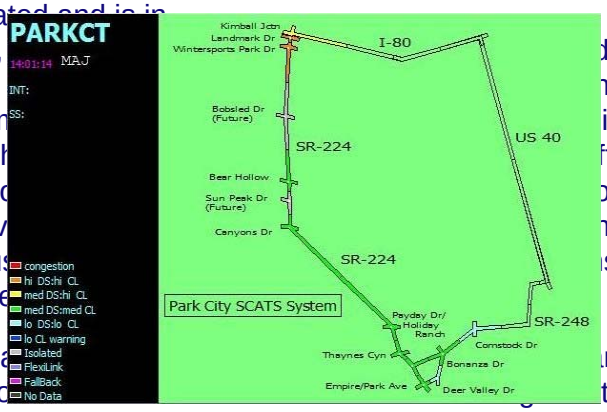
Richard Manser, P.E.
ITS Deployment Engineer, UDOT

Operating a transportation system in the Rockies comes with unique challenges. Severe weather, rugged terrain, and vast expanses of open land between population centers are a few. Intelligent Transportation Systems (ITS) play a vital role in assisting the Utah Department of Transportation (UDOT) in managing traffic in this environment.

Park City has several popular resorts and downtown destinations that are active year-round. When not hosting international snow events, outdoor concerts and festivals draw large crowds. Tourism traffic comes and goes at various times. "Normal" traffic flow is difficult to define. In this setting, UDOT decided to install a traffic adaptive signal control system. After evaluating several alternatives, the Sydney Coordinated Adaptive Traffic System (SCATS) was selected for deployment. Fiber optic communications were installed along the main highway connecting Park City to I-80 and traffic detection was upgraded at all signalized intersections.

Courtesy of Ski Utah (Lee Cohen)

The system has been calibrated and is in operation. During the July 4, drove the highway before and after the heir reports, the system is perform in traffic patterns driven by events. Th fficer to control pedestrian crowds cr one of the main intersections. The Univ having adaptive signal control versus s. Quantitative results should be



While Park City is close to Sa nd traffic engineers, Utah has other nc the state. Setting up, maintaining, and operating signal systems in these remote communities is time consuming when technicians have to travel from headquarters offices. Installing communications to these signal systems has been a high priority for UDOT.

This past year, communications were installed to several of these urban areas. A bartered exchange of fiber strands in Salt Lake enabled UDOT to connect a microwave T1 line from UDOT's TOC in Salt Lake City to the St. George Traffic Control Center. This connection enables traffic engineers in Salt Lake to access video cameras, and traffic signal controllers remotely. Using IP-Ethernet technology, timing changes, configuration of video detection zones,

continued from page 3

troubleshooting and some repairs can be made remotely and the effects observed via real-time video. The urban areas of Logan, Cedar City, Tooele, Springville, Richfield, and Vernal are in the process of being connected to the TOC through broadband or DSL providing the same functionality.

UDOT has the responsibility of maintaining safe travel along a two-lane road from the Salt Lake valley to the town of Alta and ski resorts in Little Cottonwood Canyon (LCC). Avalanche operations in this canyon and the other canyons east and south of Salt Lake are extensive, technical, and driven by the desire to protect the public and keep the road open. Moderate sized avalanches reaching the road while it is open with “bumper to bumper” traffic could damage, or destroy vehicles. Larger avalanches damage or destroy buildings and knock down acres of mature timber.

Little Cottonwood Canyon has the highest Avalanche Hazard Index (733) of any major road in North America. The next highest is Rogers Pass in Canada (174). LCC, with its steep terrain, abundant snowfall (550+ inches a year), high volume of traffic, and numerous structures located in avalanche areas, poses safety challenges. The combination of steep terrain, a layered snowpack and severe winter weather create conditions for avalanches. Avalanches are triggered both naturally and artificially. Artificial triggers include explosives or skiers. Natural avalanches are triggered by sustained snowfall, strong winds, rapid warming, or a prolonged thaw. In highway operations the greatest threat comes from natural avalanches.

Similar to ski area avalanche programs, UDOT relies on information from 3 primary sources to develop an avalanche forecast. The forecast relates to the possibility of avalanches reaching the road. The avalanche control work carried out by UDOT is intended to protect the road. In many instances the same paths that threaten the road can also threaten inhabited buildings. This requires that occupants remain inside, and in some cases be confined to the safer portions of the buildings during avalanche control work.

The first input to an avalanche forecast is snowpack conditions. To know when avalanches are likely to take place, one must understand the nature of the snowpack. This understanding comes from snowpack investigations in avalanche starting zones. It can be difficult or dangerous to travel to many of the avalanche starting zones that affect the highway in LCC during the winter. As a result, assumptions are made regarding snowpack conditions in dangerous areas. Snowpits are dug to investigate the snowpack structure. The structure is examined to determine the relative strength or weakness of individual layers, and the bonds between one layer and the next. Some layers contribute to a strong snowpack,

continued from page 4

while others are weak and potentially dangerous.

The second input to an avalanche forecast is locally observed weather activity. New snow and water equivalent, wind speed and direction, snowfall intensity, and temperature are all monitored closely.

The third input is the forecast. Twelve and twenty-four hour weather forecasts for the canyon are received twice daily from the National Weather Service (NWS). Remote weather stations throughout LCC continually transmit data to the avalanche forecast office where it is analyzed to make decisions regarding the safety of the road. Traffic Operations Center (TOC) meteorologists continually monitor storms and collaborate with a forecaster stationed in the canyon.

By combining the factors of snowpack, local weather observations, and weather forecast, UDOT avalanche forecasters develop a highway avalanche hazard forecast. The highway hazard forecast includes notification of planned or anticipated closures or avalanche control work. Notification must be as far in advance of control work as possible to allow for the lodges, the resorts, Alta, Salt Lake County sheriff, and UDOT plow crews to make necessary preparations.

As one would suspect, the number of people involved and the number of variables used in avalanche forecasting frequently lead to uncertainty about the level of hazard to the road. In these situations a test of snowpack stability must be performed. The most widely used method to test snowpack stability is with explosives. If, during the testing process, instability is detected, avalanche release becomes the primary activity. To the casual observer, the process of stability evaluation and avalanche control are indistinguishable.

Both passive and active measures are used to reduce avalanche hazards on the canyon road. The passive measure is closing the road. Road closures are implemented during periods when it seems most likely that avalanches may reach the road. Typically these occur during avalanche control work or prolonged and severe winter storms. As the canyon road is the only access to the town of Alta and the resorts, closures of long duration are not desirable.

continued from page 5

Active control measures use explosives to initiate avalanches before they can release naturally. Avalanche control work does not always result in avalanches reaching the road. In an effort to avoid large and destructive avalanches, smaller avalanches are brought down periodically throughout the winter under controlled conditions. Close cooperation between the town marshal, lodge and ski area management, and UDOT is necessary in order to allow the highway avalanche control work to be carried out as safely as possible.

The use of artillery for avalanche control was introduced to Alta in the late 1940's. Alta was the first place in the U.S. where artillery was used for this purpose. UDOT uses military artillery, fixed and portable avalaunchers, and explosive charges dropped from a helicopter for active control of avalanches. Gun crews consist of ski patrol personnel who work under the direction of UDOT. Some targets are over 3 miles away from the weapon.

When the explosives detonate, they create a shock wave at the point of impact, which fractures the snow and initiates an avalanche. As the avalanche moves downhill, more snow is continually entrained, adding to the volume until lower slope angles cause the avalanche to slow down. When small to moderate amounts of snow and lower speeds are involved, the avalanche usually stops before reaching the road. Larger avalanches moving at greater speeds will cross the road, continue towards the creek, and, in some cases, travel up the opposite side of the canyon.

Whether dealing with extreme weather in mountainous terrain, communicating with urban areas across hundreds of miles apart, or managing traffic flow in resort towns, ITS is a great tool for managing operations.

APTS Challenges for a Rural/Frontier State

John Krause
Division of Public Transportation
Idaho Transportation Department

Frontier states present a unique set of challenges for the introduction and use of advanced public transportation systems (APTS) technologies. By virtue of its definition, "frontier" states can have significant levels of remoteness and isolationism that present physical and sometimes cultural barriers to identifying, deploying, operating and supporting transit ITS hardware and software products.

Twenty six of Idaho's forty four counties are identified as "frontier" by the Frontier Education Center's National Clearinghouse for Frontier Communities. Of these, twenty one counties are served by fifteen small urban and rural transit providers. APTS technologies currently in use at these fifteen providers range from minimal to none; some of the more remote operations define their technologies in terms of No. 2 pencils, index cards, and clipboards.

With the August 2005 signing of SAFETEA-LU, Idaho received an opportunity in the form of a federal earmark to identify, deploy and operate APTS technologies to better coordinate the delivery of transport services to Idaho citizens.

Five primary goals were identified as part of a vision for improvements in transit operations and services: coordinate delivery of services i.e. provide 'one stop shopping' for the fixed route and demand response rider; improve the use of current transit assets; improve claims processing for state and federal reimbursements; simplify entry into the transportation market by new providers or expansion of operations by existing providers; and develop the means to integrate travel planning with adjacent states.

The Idaho Transportation Department's Division of Public Transportation's initial assessment of the "state of the state" for introducing APTS identified the following problems, constraints and challenges for the project:

1. Introducing technology to non-technical transit providers & getting buy-in.
2. Minimizing technology acquisition costs.
3. Reducing maintenance, upgrade and replacement costs.
4. Developing a hosting solution that's accessible by all providers.
5. Determining what the project will really cost.

For the most part, Idaho's transit providers have had minimum or no exposure to APTS. Consequently, there are cultural or other challenges to deployment of these technologies. For obvious reasons, a rudimentary understanding of APTS and its benefits, and buy-in by the providers is critical for our project to succeed.

A review of implementation histories for APTS projects underscores that significant portions of project budgets are spent for acquisition tasks such as requirements development, RFP development and processing, and purchasing contract award and administration. These costs, coupled with post implementation costs as related to operations, maintenance and upgrades, can quickly draw down any APTS project budget.

In a geographically dispersed environment such as Idaho's, local installations of software products at each provider's location can be costly and unfeasible. The relative lack of local data center resources – both in terms of computer room

continued from page 7

facilities and IT support staff – makes local server installations unsupportable and something to avoid, with a solution "hosted" elsewhere making much more sense.

At this point in time, the total cost to deploy APTS technologies for Idaho's small urban and rural transit providers is unknown. Consequently, a key portion of Idaho's APTS project plan is to develop a spending program for the project identifying both initial and ongoing costs (e.g. operations, maintenance, and upgrade costs) for the life of the system.

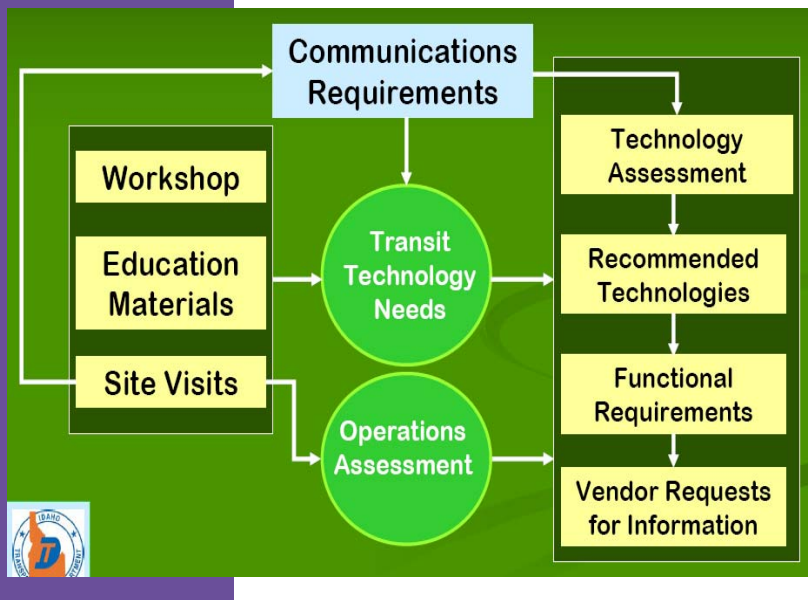
ADDRESSING THE CHALLENGES

Introducing Technology and Getting Buy-In

We recently ran our Idaho transit providers through a "crash course" on APTS. We developed and delivered a two day workshop to educate our providers on APTS hardware and software, beginning with a review of APTS technologies such as automated vehicle location, scheduling software, and smart fare card technology. Simultaneously, an adjacent room at the venue (a local hotel) was set up as a vendor forum or show with companies such as Orbital, Trapeze, RouteMatch, NextBus and Shiftwatch in attendence; vendors were also given an opportunity to deliver presentations on their technologies. Our workshop included presentations by transit representatives from the states of Iowa and South Carolina; these sessions gave our providers an idea of "lessons learned" from states with environments similar to Idaho.

Realizing that we could not develop a single configuration of APTS technologies that would suit all transit providers – a "one size fits all" approach - we saw a need to "right size" the technologies, i.e. develop a suite or portfolio of transit ITS hardware and software products aligned to three categories of transit providers: small, medium, and large.

A variation of this approach had been successfully followed in the state of Iowa, and included surveying and categorizing each provider's operation. As a result of this approach, providers receive a technology solution commensurate with the size and scope of their operations.



Another approach that helps to simplify APTS software technologies for non-technical users is to define APTS applications as a set of transit-related "services". In the non-transit world, most folks are familiar with Amazon, eBay and HotMail. Amazon.Com (buying books), eBay (online auctions), and Hot Mail (email) are examples of "services" that have become ubiquitous and commonplace for Internet users, irrespective of their technical expertise. The common thread with each of these

continued from page 8

services is that the backend infrastructure – servers, storage, application programs, etc. – is kept far, far away from the users. All the user needs is familiarity and minimal expertise with their desktop browser interface i.e. Microsoft Internet Explorer.

APTS software functions such as determining transit vehicle location, scheduling of rider, etc. can be defined as "services". In this model, APTS application software is installed on Internet-connected servers at a centralized hosting center. Transit providers would use their local workstations to access a vehicle location or scheduling "service" through the Internet, just as they now access book purchasing, online auction, or email services through Amazon, eBay and HotMail. The need for local support is reduced to a level that's easily provided over the phone.

Minimizing Costs

Minimizing the number of installations of software onto servers leads to operating and maintenance costs savings that are optimized for the entire life of the system. Purchasing multiple servers - one for each transit provider during the initial stage of the project - requires budgeting multiple annual licensing fees for software, multiple equipment replacement costs for replacement servers when the old units become obsolete five years or so down the road, along with a gamut of other reoccurring costs. This should be avoided. Having a single, centralized server farm providing access to the entire state means license fees, server replacement costs, disaster recovery costs (e.g. hot sites), etc. are minimized with no loss in function to any one provider.

A 'virtual transit enterprise' or services approach - such as developed in the state of South Carolina – allows providers to subscribe or enroll in the use of various APTS software products without having to add or purchase additional server hardware. Adding or deleting services could be done as simply as through a phone call, although some situations could require acquiring additional local workstations.

Standardizing APTS hardware and software products allows APTS technologies to be provisioned as "commodities" with predefined levels of support and with interoperability requirements engineered in advanced.

Aggregating APTS product quantities for the entire state results in a better use of buying power, leading to better pricing and more attractive terms than buying products individually. Idaho state purchasing rules allow the development of statewide purchasing agreements that can be used by all Idaho transit providers, not just those that are included under the umbrella of Idaho's APTS earmark. Vehicle counts from Idaho's large urban providers can be aggregated in RFP/RFB documents with those from the small urban and rural providers to maximize the extent to which this buying power is leveraged to the best advantage of the state, resulting in lower costs to all.

Reducing O&M

Reducing the number of data center sites where server software is actually installed helps minimize ongoing operating and maintenance costs. Placing all server hardware along with support resources in a centralized location minimizes support costs and results in an improved ability to respond to server hardware and software

continued from page 9

problems. Server backups are more easily accomplished along with other regularly scheduled tasks such as operating system and application software upgrades.

Standardizing application software products result in a more homogeneous support environment resulting in lower application support costs. Having the same software products in place across the state can also encourage providers to develop informal support mechanisms in which providers share tips and tricks they've learned through their own use of the product.

Developing an ongoing hardware and software replacement cycle as part of the original project budget minimizes "surprises" later on during the operation of the system by insuring that needed technology replacements are forecast well in advance.

Concurrently, operating and maintenance costs for the ongoing use of the APTS technology should not be a budgetary surprise. As much as is allowed, the O&M costs for the first years of operation should be included within the initial purchase price. Funding for operations and maintenance expenses beyond this should be well understood and reflected in future year budgets for the providers.

Centralized Hosting

Centralized hosting – installing APTS server-based software onto a single centralized server farm - is recommended as a means of reducing initial and ongoing costs - but where to host?

Virtually none of Idaho's current transit providers has a data center suitable to host the state's APTS system. They might have a computer room adequate for their own instance of an APTS system, but are not able to handle operations for the entire state.

Philosophically, the Idaho Transportation Department is not a candidate to provide central hosting for Idaho's transit providers.

Options may exist within the larger urban environments, especially if there is a partner relationship in place with a metropolitan IT department. Whether there is a willingness to host applications for use by the entire state is another issue.

The most likely alternative for Idaho's APTS project will be to engage a third party application service provider as a hosting partner. The third party hosting center could be located within Idaho or it could be outside the state. This is similar to the configuration in South Carolina where an Atlanta-based hosting center provides the back end computing resources for South Carolina's *Virtual Transit Enterprise*.

Determining Total Costs

"Provider categorization" and "technology profiling" are ways to appropriately align APTS technologies with transit providers based on size, scope and mode of operation. It also allows a modular approach to project budget development. Grouping or packaging various APTS technologies into suites or portfolios identified for a specific provider category (i.e. small, medium or large provider) allows for commodity-based approach to budgeting. For example, an Automated Vehicle

continued from page 10

Location (AVL) system for a medium sized provider would consist of a number of subsystem components, but could be costed using an "AVL_{Medium}" unit cost. There would be unit costs for less or more sophisticated deployments of AVL, with correspondingly lower or higher unit costs, respectively.

Similarly, following the commodity or "services" approach inherent within the virtual transit enterprise model, results in a clear budgeting path for adding on transit providers. For example, a new provider in the medium category of transit provider scope and size would be slated to receive a predefined list of APTS hardware and software products appropriate for the anticipated level of their operations.

Following development of the provider categorization model and assignment of Idaho's fifteen transit properties to small, medium or large categories, a Request for Information (RFI) document will be developed and circulated among the APTS vendor community. The RFI will describe the transit environment and provider categorization model along with a proposed narrative of how we think the hardware and software environment will function. APTS vendors will be invited to comment on what Idaho is proposing to do and to offer their own recommendations and solutions. This step is meant to provide a "reality check" on what is practical as opposed to theoretical. It will also help us develop a more accurate estimate of the total project cost and timeframe.

A subsequent step to the RFI process will be one or more Requests for Proposal and Requests for Bid. Responses to these requests will be used to develop purchasing agreements for goods and services and will also lead to development of a final project budget. Additionally, taking into account operating and maintenance expenses and technology replacement costs and cycles, we will be able to develop a long term spending program to implement and sustain the APTS system.

To summarize, in its APTS project, Idaho has encountered a variety of issues that are typical of those experienced by "frontier" states. Ideally, Idaho is responding to these challenges in a way that may be duplicated by similar states. ■

CSI: Mystery of the Broken Fiber

Dave Judy
ITS Project Manager
Colorado DOT

It was a pleasantly warm Thursday afternoon, and a typical Colorado day, when strange things started to happen. Images from our traffic cameras in the mountains started to disappear! Personnel from our Traffic Operations Center could no longer look at critical pieces of the I-70 corridor. Visitors to CoTrip.org could only see colorful vertical bands rather than views of traffic and weather conditions between Georgetown and Silverthorne. What sinister deeds were taking place? Round up the usual suspects.

I thought it was going to be an uneventful Friday morning when I got to the office. As I glanced at my E-mail, I noticed one from Rod Mead, CDOT's Chief of the Traffic Operations Center. Normally I delete his E-mails right off, but something made me open this one. As soon as I read it I knew I should have deleted it. We lost video images and communications to the Eisenhower Tunnel. Somehow, our fiber optic line was compromised. In other words, the fiber optic cable which is smaller than the diameter of your thumb, and runs along side and under I-70, was apparently severed. Somewhere between Denver and the Eisenhower Tunnel we have to find a cut cable. Who could do such a dastardly act?

The culprit is usually a contractor working in the vicinity. It is very easy for a backhoe to accidentally cut the cable. CDOT, however, placed several barriers to keep the cable out of harms way. It is buried underground in plastic conduit. Concrete was placed over the conduit for added protection. In addition, there are white and orange markers placed above ground warning of the cable. A telephone number is also on the marker. This number is for the contractor to call and have the cable located. With the precise location marked with paint and small flags, the contractor will then know what areas to either avoid, or carefully dig. 99.9% of the time this method keeps the cable from trouble, but not today.

A quick survey of construction operations in the area showed nothing unusual. Guardrail was installed in various locations. That contractor, however, already knew of the cable's existence. They also were not working near the cable that Thursday afternoon. Another contractor was repairing a sinkhole that was discovered west of Idaho Springs. They were working in the median, however, and the cable was on the north shoulder at that location. In addition, a camera just west of there was still operational. I deduced the cable could only be severed west of that area. The only other operation that day was on Georgetown Hill. A contractor was rock scaling, that is knocking boulders off a cliff. What damage could that do? I knew it was time to call the boys in the lab.

CDOT CSI

Enroute is a company that we use for situations like this. Matt Becker is a mild-mannered expert that had the electronic tool for the job. He told me an OTDR found the general location of the break. Since I am acronymistically challenged, I had to ask its meaning. It stands for Optical Time Domain Reflectometer. This machine shoots a short laser pulse into the optical fiber. It measures the light that is reflected

continued from page 12

back from the break. Since we know the speed of light, it can calculate a distance to the broken fiber. Matt performed this test at CDOT's fiber optic facility at Hidden Valley. He determined the break was approximately 18 miles west. He then traveled to the last working video camera which was at Georgetown. That test narrowed the distance to 1,300 feet west. Now we were cooking.

Shortly thereafter, a caravan of CDOT and Enroute trucks headed for Georgetown. About a dozen orange clad investigators were soon scouring the side of the road for possible clues. They were kicking stones, popping pull box covers, measuring from the OTDR test site and keeping a watchful eye on the cliffs above for any loose rocks. One of the investigators was particularly focused. Enroute's Alan Scheidt was tracing the fiber optic path like a blood hound with his nose to the ground. He soon came upon a piece of broken concrete in a depressed area near the shoulder of the Interstate. Out came the shovels for a deeper look. Soon we uncovered the protective cap of concrete that was placed over the fiber optic conduit. That concrete cap was sheered by some great force. We were able to dislodge a chunk of that cap and we discovered flattened conduit underneath. With the help of Sheid's keen eye, we found the problem. Several feet of conduit were squashed like a worm on the sidewalk. Inside the conduit lay the shattered piece of fiber optic cable.

Once the break was discovered, a junction box was installed at the point of the break. Additional fiber, already coiled at each end, was then pulled into the box. Each of the 144 stands of optic fiber were then reconnected using a fusion-splicing method, which melts the ends of the fiber together with a high degree of precision. Each fiber optic cable contains 144 strands of pure optical grade glass fiber that is no more than the approximate width of a human hair. Because the speed of light is so fast, light that is transmitted through a single fiber can carry much more data in one second than copper wire, which is significantly thicker in size.

Now for the Dirty Work

Since CDOT is still under contract with the company that originally installed the fiber optic cable, InfraSource Underground Services, we were able to get personnel and equipment to repair the cable quickly. Bryan Dahl of

continued from page 13

InfraSource was kind enough to dispatch several subcontractors to perform the fix on short notice. A backhoe and several workers quickly uncovered about 10 feet of broken concrete. Once that old cap was removed we were able to see the extent of the damage. Inside the conduit lay the shattered piece of fiber optic cable. The damage was quickly cut out, and the fiber was pulled from both directions. There is always 50 to 100 feet of coiled cable in adjacent pull boxes. This gave the subcontractor, Balderston Construction, enough cable to splice. A new pull box was placed in this spot and everything was returned to normal. For the next two days, a company called Connection One spliced the 144 strands of hair-like pieces of fiber and tested the connections. We were then back in business.

Lessons Learned

We later discovered on that fateful Thursday afternoon, a company under contract to CDOT was rock scaling in that area. Large boulders were dropped from heights of 100 feet or more. One boulder landed on the surface above where the fiber optic cable was and the force of impact caused the damage. Since this area along I-70 has a history of falling rocks and boulders, there will be more rock scaling in the future. CDOT will take steps to protect the fiber cable during these future projects. It is hoped the scaling efforts will stop any harm to the traveling public and the fiber cable. We at CDOT, however, hope if Mother Nature brings down any large rocks in the future, it will hit our fiber optic cable rather than any passing motorist. ■

(Editor's note: This article was previously published by the Colorado Department of Transportation. After one of Mr. Judy's co-workers suggested reprinting it here, I couldn't resist as I am a true CSI junkie--I hope you enjoyed it!)

News from around the region...

New Mexico DOT Installs Traffic Cameras

ALBUQUERQUE, NM. The New Mexico Department of Transportation is installing a network of cameras around the state to help manage the flow of traffic. The cameras will all be linked to a command center being established in the Mid Region Council of Governments building in downtown Albuquerque.

"This will help us identify and pinpoint exactly where those help trucks are needed to be able to clear up traffic if a car runs out of gas or has a flat tire," said Transportation Secretary Rhonda Faught. The command center will also be able to activate message boards to warn drivers of problems and advise them of alternate routes. The federal government is picking up the $1.2 million tab for the system, which is expected to be operating by Halloween.

By: Reed Upton

Wireless Internet Access on Select UTA Buses

SALT LAKE CITY, UT. Even if your No. 72 bus from Ogden happens to arrive late in Salt Lake City, your e-mails will get to work on time. The Utah Transit Authority and a tech company have rigged four commuter coaches for wireless Internet access, an experiment UTA hopes will lure more people out of their cars and onto the Wi-Fi Express. The service has been available for a week now on four buses leaving the Ogden Intermodal Center between 6:42 and 7:16 a.m. Return buses leave 400 South and State Street in Salt Lake City between 4:28 and 4:58 p.m.

Layton resident Barron Kelley discovered the perk Friday morning. Friday evening, he logged into his online University of Phoenix project management class he's taking for his MBA degree. "I can actually do homework and go into a chat room with my class team," said Kelley, who works for Questar. Todd Steadman of Clinton was logged into four different software-development servers Friday evening. A software engineer for The Church of Jesus Christ of Latter-day Saints, Steadman was troubleshooting a missing database for the LDS.org Web site. After he and his on-site co-workers fixed the failed processing job, Steadman tapped into his home computer to check out the domestic scene. "I have 16-year-old daughters just getting into dating," he said. "The other day I saw one logging on, so I touched base."

Wi-Fi fans know that the main goal is to find an access point with enough juice to maintain a connection. Such access points are now common features at hotels and coffee houses. But hotels and coffee houses don't motor up the freeway.

In building the rolling Internet cafe (minus the food and coffee), UTA and its partner, Parvus Corp. of Salt Lake City, attached routers to the buses that channel the Sprint wireless network along Interstate 15.

Clair Fiet, UTA chief technology officer, explains it this way: An antenna captures the Sprint signal which goes to the mobile router, kind of a traffic cop in a box that manages thousands of electronic pathways. The router turns the connection into a Wi-Fi access point exclusive to each of the four wired-up coaches.

While the equipment is adequately armored to withstand jerky movements, it's possible that a laptop user could lose her signal momentarily on the ride to work or home. But the computer would only stall, not crash, and resume activity in a matter of seconds.

Because Sprint, Parvus and UTA surveyed the I-15 route and found it good, "we shouldn't have a spot where we drop the signal," Fiet said. Said Steadman, "My remote router in my office is less reliable." Steadman said he's pleased to spend more time at work during his hour-long

continued from page 15

each-way commute, and is spreading the word among his co-workers. "Everyone I've talked to has said, 'Wow.' They've been altering their work schedules to get on the buses," he said. "Some colleagues of mine take the 73 [express] and they're kind of jealous," added Kelley.

Equipment for each bus cost about $5,000. UTA paid for rigging up two buses and Parvus the other two, Fiet said. Kyle Brimley, UTA technology deployment project manager, said his agency hopes to capture more riders with the experimental service. About midway through the 60-day pilot program, UTA will survey users about the experience. At the end of the experiment, UTA will evaluate whether it wants to continue or expand the service. If so, it would be put out to bid through normal competitive bidding, Brimley said.

Parvus Director of Business Development Andrew Hunt said his company does business with military and aerospace clients as well as transit organizations, but usually outside the state. The pilot program, Hunt said, would help Parvus field test a new system before bidding for further Wi-Fi service on buses and commuter rail.
By Patty Henetz, Salt Lake Tribune

Colorado Tests Travel-time Messaging

DENVER, CO. Tired of wondering how long the I-70 back-up will last? Spending too much time wondering if you should get off at Empire? CDOT is exploring a way to help. Starting in October, drivers might encounter a "45 minutes to Frisco" sign. State transportation officials plan to test an electronic messaging system to let motorists know estimated travel times on Interstate 70 between C-470 and Copper Mountain. Transponder readers, radar and traffic-metering devices along eastbound and westbound I-70 will process data to predict travel times to specific destinations in the 60-mile corridor, said Stacey Stegman, spokeswoman for the Colorado Department of Transportation.

Travel-time messaging can help motorists make better travel decisions, said Clear Creek County Commissioner Harry Dale. If the messaging program is a success, it could remove some of the guesswork that now accompanies trips in the I-70 mountain corridor. Especially on weekends and during peak holiday travel periods, travel on I-70 west of metro Denver can be maddeningly slow, with too many vehicles trying to squeeze through the narrow mountain corridor at the same time.

For years, CDOT has been studying ways to improve the movement of people and goods in the corridor. The state has favored widening I-70 at strategic locations; critics say CDOT is too fixated on highway expansion and they are pushing for more bus and train service, possibly even a futuristic monorail.

The message signs on I-70 are about 15 miles apart. There are six on the westbound side and eight for eastbound. Travel-time messages will not be broadcast if an accident or other incident such as a rockfall closes the road, Stegman said. Transponder readers used to calculate travel times are not able to collect personal data on vehicles, and the information is purged from the system within two hours, Stegman said.

At the end of the test period, CDOT will consider making the program permanent and expanding it to make the same travel information available on its website, Stegman said. "We need to ensure that we're getting reliable data," she said. Dale did point out one possible downside of the messages: "The more detailed information you put on signs, people slow down. It can create traffic jams."
By Jeffery Leib, Denver Post

Study Finds Low Morale Among ITD Employees

BOISE, ID. Former ITD Director Darrell Manning recently conducted a study to determine

The affairs and business of the ITS Rocky Mountain Chapter are managed and controlled by its Board of Directors. This Board, made up of representatives or Senators from each of the six member states, delegates to the Chapter Officers the necessary powers to conduct Chapter business.

OFFICERS

President - Richard Hodges,
Utah Transit Authority
Vice President - Mark Owens,
Meridian Environmental Technology
Secretary/Treasurer - Brandi Hamilton,
Montana Dept. of Transportation

BOARD OF DIRECTORS

COLORADO SENATORS
Robert Kochevar,
City and County of Denver
Marilyn Kuntemeyer,
David Evans & Associates, Inc.

IDAHO SENATORS
Robert Koeberlein,
Idaho Transportation Department
Jim Larsen,
Ada County Highway District

MONTANA SENATORS
Mike Bousliman,
Montana Dept. of Transportation
Steve Keller,
Montana Dept. of Transortation

NEW MEXICO SENATORS
none currently serving

UTAH SENATORS
Bryan Chamberlain,
Utah Department of Transportation
Richard Manser,
Utah Department of Transportation

WYOMING SENATORS
Kevin Cox,
Wyoming Dept. of Transportation
Keith Trimels,
IDT Group, Inc.

Newsletter Editor: Dara Wilson
dwilson@meetingsnorthwest.com

employee concerns in the Idaho Transportation Department. After holding 60 interviews with state transportation employees he discovered a sense of uncertainty and strained communications which led to a lower overall morale in the Idaho State Transportation Department. He attributes this uncertainty and fear of change in part to the new "Connecting Idaho" road -building plan and GARVEE bonding which change the way ITD creates projects. Manning told the associated press that some employees feel their individual skills aren't being utilized since private firms have been awarded contracts to manage the first phase of "Connecting Idaho". The study was commissioned by the Idaho Transportation Board which Manning reports has "overwhelming support" from ITD employees. Hopefully high morale will return with the new board chariman, better communication, and more chances for ITD employees to use their own skills in road planning.

ITS Rocky Mountain Board of Directors Meeting

BIG SKY, MT. The 2006 Annual Business Meeting of the ITS Rocky Mountain Chapter was held in conjunction with the 2006 National Rural ITS Conference on August 13, 2006 in Big Sky, Montana. A full report of the proceedings from this meeting can be found online at www.itsrm.org. A highlight of topics discussed follows:

Election Status
Montana and New Mexico senatorial terms expired in 2006. Mike Bousliman and Steve Keller were unanimously reelected to their respective Montana seats. We were unable to identify any candidates from New Mexico. The Board of Directors will continue outreach efforts in New Mexico in an attempt to increase participation and membership within the state.

State Chapter Council Update
Steve Albert updated the group on the recent activities of the ITS America State Chapter Council (SCC). They are currently writing a strategic plan that will serve the SCC for three years. This will eventually lead to a one year action plan. At this time SCC is determining what types of outreach it wishes to participate in or encourage state chapters to participate in. Local (state) chapters can already help coordinate things like "demonstration in a suitcase".

Student Program Update
The student chapter program is moving forward. There are currently 2 full-time student chapters in the region – one in Idaho and a second in Wyoming. The Idaho chapter currently has 11 students while the Wyoming chapter has 30 students. Montana State University (MSU) is planning on becoming a chapter in the fall and Meetings Northwest, LLC will conduct another push for more chapters once schools are back in session.

Future Training/Conference Events
Following the biannual schedule of alternating workshops and conference, the Chapter is set to host a workshop in 2007. It was decided that New Mexico will be the primary focus followed by Utah and/or Wyoming. The workshops will have a communications focus and will be detail oriented (an example was given of a workshop WTI hosted).