MONTANA RAIL LINK
Dispatch
Special Edition

MRL and Digital Concepts: Advanced Technology Partners

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Director Signal & Communications

In a business climate that demands the most from existing assets and capital investments, most railroads look to information systems and technology to gain competitive advantages. Decision support and analysis tools enable railroad managers to make the right call, helping them weigh conflicting priorities and allocate resources to design and implement the plan that best supports business objectives.

In the last few months, MRL has taken a giant leap forward in this arena by partnering with Digital Concepts to deploy and utilize new technology. This is enabling MRL to reap the benefits of the most advanced traffic management technology that is fully deployed in North America.

Using an eAX Wireless Workstation. Assistant Roadmaster Mike Rahl plans work, and requests and receives track authorities on a Sperry Rail Services Inspection Car

→ Montana Rail Link - Technology Firsts

The foundation of the MRL plan is to integrate two key next-generation technologies into their dispatching and operations management: AMPS™ (Advanced Movement Planning System) and eAX™ (Electronic Authority Exchange). These tools are enabling MRL to gain productivity in the dispatching office, in terminal operations, and in scheduling and performing maintenance - gains that have great potential for bottom-line savings. As an added benefit, these tools also increase worker safety at the same time. ***The planning software will help MRL run a more efficient and safe railroad,*** says Don Smith, Director of Transportation. ***It should be a huge benefit to new and less-experienced dispatchers, enabling them to realize the outcome of their decisions and helping them to make the necessary changes. The more experienced dispatchers have been quite surprised at how accurate the planning tool is turning out to be. It is also a huge benefit to the managers.***

MRL is the first railroad to deploy Train View Control, which enables dispatchers to plan and direct train movements from a graphical string-line display. Other new tools like Authority planning help MRL dispatchers and managers to use "what if" scenarios to develop and implement the most advantageous movement plan. By utilizing Train View Control, the expected issue and release time of authorities can be easily modified. DigiCon's advanced distributed architecture typically provides Movement Planning feedback in that it shows the impact of the proposed change in five seconds.

MRL is using other new AMPS features from DTC/6™, including:

- Master Train Schedules - enables schedule templates to be created for either specific trains or a class of trains and automatically creates an individual schedule for each train.
- Graphical Views of Train Routing - this integrated view enables dispatchers to graphically visualize both the train schedule and current Movement Plan.
- Movement Planning Background Mode - provides Movement Planning data to operations manager and other dispatchers, even when a dispatcher is using manual mode.
- Train View Replay - records Train View information for later analysis to determine how a Movement Plan evolved, and the effects of multiple events over time on the overall Movement Plan.
- Movement Planning Decision Factors - a more flexible set of Movement Planing scoring criteria, which enables each railroad to customize Movement Planning to their environment.

These new AMPS tools are in-service today at MRL, helping them to propel their operational planning and productivity to a new level. This is not a pilot of new technology, but a suite of installed tools that is utilized on a daily basis.

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→ Defining the Next Generation

The combination of AMPS and eAX provides true Computer Aided Planning, the next generation beyond Computer Aided Dispatching. This philosophy is based on utilizing assets in an optimal manner - maximizing revenue operations against the competing demands of maintenance, creating an integrated operations plan among dispatchers, operations managers, and terminal managers that enables the railroad to operate from one plan and providing railroad-wide distribution of an eight-hour Movement Plan to coordinate overall network operations. Bringing these processes together moves a railroad from simply Computer Aided Dispatching to Computer Aided Planning. The resulting movement and work planning can have a railroad-wide impact, enabling coordinated operations that work together towards a common goal.

→AMPS

AMPS is an integrated tool suite that impacts all phases of operations and consists of SmartETAs, Movement Planning, Terminal Management, and associated support technologies. The tools available in AMPS enable dispatchers, operations managers, and terminal managers to work together to optimize a computer-generated Movement Plan, creating an integrated operations plan across the railroad.

The goal of AMPS is to leverage the best strengths of computers and railroad personnel, providing decision support, meet/pass planning, rapid Movement Plan generation and recalculation, "what if" planning scenarios, and automated implementation. In short, AMPS allows dispatchers to become strategic planners relieving them from the drudgery of "pushing button", and giving them the tools and time to focus on strategic operations. Rather than trying to reduce the role of dispatchers, AMPS recognizes that, in some cases, human decision- making can be superior since people can incorporate information not available to computers. AMPS helps shift decision-making from the next 15 minutes out to the next eight hours, and enables dispatchers to plan better further in advance, and react to changes more quickly.

AMPS tools like Tran Views™ and Train View Control raise the level of the dispatcher's interaction with the system, moving it from purely tactical to more strategic. By not having to clear signals and throw switches, wait for the meet to happen, and then manually route the trains out - only to do it all over again for the next meet or pass - AMPS enables dispatchers to instead focus on planning and optimizing operations.

→ Terminal Integration and Management

As a part of the new technology deployment, MRL is utilizing DigiCon's Terminal Management Workstation across the entire operation. A single workstation in the Missoula Transportation Center provides terminal arrival and departure updates for four primary terminals - Missoula, Laurel, Helena, and Livingston.

MRL Terminal Management Workstation

The Terminal Management Workstation provides train departure and dwell information to AMPS automatically, based on scheduled train movements. This eliminates the traditional "black hole" of terminals in planning operations and provides an end-to-end planning view of MRL's entire mainline. In addition to generating ETD's for through and originating trains, the Terminal Maangement Workstation enables operation managers to tweak the plan to suit current operating conditions. The Movement Planner combines this information with mainline meets and passes to generate a cohesive, railroad-wide operations plan.

→ eAX

eAX (Electronic Authority Exchange) is a product proven to dramatically increase both safety and productivity for maintenance forces and dispatchers alike. eAX and Wireless Workstations have been deployed with over 50 users on different railroads and over 40,000 eAX authorities have been issued already in 2004.

Another MRL first is the issuance of TWC (Track Warrant Control) authorities via eAX. Because TWC authorities normally contain significantly more verbiage than CTC Track Authorities, the benefits of eAX are further magnified in TWC territory. Combined with DigiCon's Graphical TWC, it provides extensive planning benefits in dark and ABS territory as well.

In addition to automating authorities, eAX also provides wireless access to the AMPS movement plan. With Train Views, mobile users can see a graphical eight-hour movement plan, helping them to plan their work more efficiently, and not interfere with revenue operations.

eAX is fantastic and the increase in efficiency is undeniable, according to MRL Assistant Roadmaster Mike Rahl. ***For example, while working on the Sperry car today, I needed to clear for an east-bound. On my laptop, I could see that the east-bound was going to depart the yard later than expected, and I was able to send the dispatcher a note requesting an extension. I was quickly granted the extension and worked right up to train time. Previously, this would not have been possible.***

Doug Jetmore of Sperry Rail Services adds, ***I wish we could have this tool on all the railroads that we operate on. Actually seeing the real-time graphical representation of the authority limits gives us more confidence that we are within our protections. Also, our inspections can be planned more efficiently based on train traffic and other factors. In addition to maintenance of way forces, eAX is also providing benefits to the signal department.***

I recently used the Wireless Workstation during a CTC cutover, and it was very beneficial. Reports Steve Griffin, Director Signals and Communications, ***We could see exactly where the hot trains were that had to clear before we got our window. After the cutover, we were able, from the cutover location, to see exactly what the dispatcher's graphical screens were showing.***

MRL is also the first railroad to implement GPS-based limit checking with eAX, in both CTC and TWC territories, which is providing an added measure of on-track safety. This cost-effective safety enhancement detects when a vehicle exceeds its authorized work limits and notifies both the vehicle operator and dispatcher, enabling them to immediately correct the situation.

→ Receiving Benefits after only a Few Months

MRL has already gained significant advantages from the new technology that has been deployed. eAX has provided dramatic safety and productivity improvements for both dispatchers and maintenance forces. Its benefit is becoming clear across the company. ***This is a very, very good tool,*** remarked Executive-in-Training Mike Lemm.

In addition, AMPS is providing railroad-wide planning tools, incorporating, mainline and terminal operations into a responsive, real-time Movement Planner. Not just dispatchers, but operations managers, terminal personnel, and mobile forces see an integrated operations plan, and plan their work accordingly.

→ A Bright Future

The achievements described above are only the beginnings of a partnership that will continue to advance technology, safety, and productivity. As the future unfolds, there will be an even tighter integration between the office and field, unifying railroad operations in a new way. Can advanced technology change operations in a way that benefits the bottom line? It already has, but tremendous potential still exists on several fronts. What will the future hold? Stay tuned for more as Montana Rail Link leads the industry to the future.