

INFORMED SOURCES e-Preview November 2019

Apologies for the late arrival of e-Preview this month. As I mentioned a couple of blogs ago I've been writing some articles for our annual directory 'the Modern Railway' and last week it was head down to meet the deadline: then a new commission came in for an exciting supplement in the next issue.

Anyway, this month's Informed Sources is a Traffic Management (TM) special, with reports on three variations on the theme. With Traffic Management an abbreviation-heavy technology, this month's Informed Sources has an 'Abbreviation Buster' panel listing all 31 abbreviations and acronyms in the column. Feedback on this new feature would be appreciated

Traffic Management at the crossroads

Great Western – Integrated TM proves its worth

Cardiff & Thameside – ODST making a difference

Southeastern launches new Operations Control System

A review of progress with TM is timely because Network Rail is embarking on another round of procurement. In May this year Network Rail Infrastructure issued an OJEU Notice, seeking a Traffic Management Partner (TMP). The procurement covers two framework agreements, one for the Eastern Region and the other the London North Western Route. Estimated combined value is £180 million.

Procurement is part of the ECML South signalling upgrade under the Digital Railway Programme. The other contract covers installation the European Train Control System (ETCS) between London and Peterborough.

According to the press release announcing the start of this latest TM procurement 'the traffic management system will be the first tailored system on the network designed and developed in conjunction with industry partners, reflecting a new way of working for Network Rail'.

This is complete and utter tosh. The first 'tailored system' on the network went live in June 2018 and, after an evaluation period, Resonate's Luminare Integrated Traffic Management system is now 'business as usual' on the Great Western Main Line. To date it has made 50,000 schedule adjustments.

Obviously, this doesn't count in the Digital Railway bubble. As a very senior Network Rail manager remarked to me, 'Resonate achieved more in a year than Digital Railway managed in a decade'. You can understand why that sort of success doesn't go down well.

Outside the bubble, I would pause the ECML TM procurement and go for immediate benefits. The York ROC and the Liverpool Street IECC both have the same IECC Scalable as Great Western's Thames Valley Signalling Centre. Both could be equipped with Luminare Integrated TM within months, drawing on the GW experience described below.

Otherwise a replay of the BR Modernisation Plan diesel locomotive Pilot Scheme is on the cards.
First Integrated TM proves its worth.

In June 2016, David Waboso, recently appointed Network Rail's Director Digital Railway, reversed the traditional procurement process. Instead of telling suppliers what was wanted, contractors were asked what they could do for Network Rail.

First to respond was Derby-based Resonate. Within six months the company had proposed a trial of its Luminare Integrated Traffic Management system. Resonate would fund, install and support the system: Network Rail would pay for training and associated costs.

In June 2017 Network Rail signed the contract for a trial installation for the Great Western Route, based at the Thames Valley Signalling Centre (TVSC). Although referred to as a 'trial', this gives the wrong impression of the contract. A better description would be an 'evaluation' of Integrated Traffic Management in service. Not does it work, but what does it offer?

Multiple firsts

Luminare went live at the TVSC on June 10 2018. In 18 months from proposing the trial Resonate had delivered Network Rail's first operational TM installation. The two schemes ordered in May 2014 under the TMS procurement First Deployment contracts would not go live, and then with only the most basic Isolated TM, until six months later.

Luminare's initial facilities were train graphing, real-time timetable re-planning, possession management and automated platform docking. These would be extended over ensuing 15 months.

In January 2019, Luminare became the first TM system to accept data from the TRUST train reporting system using Network Rail's LINX communications network. The ability to received 'reliability events' from TRUST, means that the Train Running Controller (TRC) no longer has to enter the same information into both systems twice. Next came the even more important ability to output data over LINX. This meant that Luminare was now truly 'integrated'.

With the evaluation period over, further upgrades will extend operational performance. First of the major enhancements will be integration of Crew & Stock Systems decision support tools.

Back in 2014 operator GWR trialled the use of a Connected Driver Advisory System (C-DAS) to smooth the flow of traffic at Airport Junction, where Heathrow Express services have to join the stream of GWR high speed trains. That trial, while successful, was not taken up.

But now that the Class 800 units have replaced IC125s, a revival of C-DAS for Airport Junction is on the cards. The trains are already fitted with DAS and Luminare can re-plan the timetable in real time.

Benefits

When the Evaluation project was conceived it seemed so simple. Luminare would get to work, PPM would improve, GWR's Schedule 8 disruption payments to Network Rail would fall and some of the financial savings would pay for Resonate's investment in the project. How naïve we all were.

That would have worked in a steady state operating environment, but GWML has been in a continuous state of flux for the past decade. Separating out the benefits of TM from the impact of commissioning a fleet of new trains, electrification, resignalling, plus a significant reduction in delays due to infrastructure failures has proved nigh-on impossible.

Faced with these imponderables, an independent assessment of the benefits was commissioned from consultancy Steer. It concluded that Luminare 'creates a stronger foundation for operational benefits to be delivered compared to the pre-Luminare situation'. In addition, operational expertise has been embedded in the software which has enabled a 'systematic improvement to the operation to complement the skills of the users'.

Steer highlight Platform Docker as providing a 'significant enhancement' through its ability to combine decision-support capability with the functionality to implement the decisions'. This is consultant speak for 'you can change platforming on the screen and the changes are implemented in ARS automatically'.

Other specific benefits identified by Steer include a more predictable operating environment, thanks to Luminare enabling ARS to handle Very short Term Plans. Similarly, Luminare ensures that the instructions sent to ARS are consistent and repeatable.

Steer also pick out the importance of the two-way communications via LINX. In addition to ARS, modifications to train services are also fed automatically into TRUST, providing a 'single source of truth' for delivery of the plan. Once again this is all about predictability in decision making.

Something Steer don't mention, but which was emphasised on my visit to TVSC, is the impact of Luminare on an 'average day'. TM was sold originally on its ability to cope with the railway equivalent of the butterfly effect – a train 10 mins late off Newcastle generating thousands of delay minutes in Plymouth.

But what is happening at TVSC, is the continuous use of Luminare by controllers and signallers to 'fettle' the service. 'Lots of relatively small decisions aggregate up to a better outcome, changing an average day into a good day'.

However, the main message from Steer concerns not the performance of the technology, but the ability of the organisation and people to exploit its capabilities fully. For example Steer found that a small numbers of users have been making a 'disproportionally high' number of edits.

Steer concluded that 'lower levels of system use are restricting the user and operational benefits currently being realised'. What the evaluation of Luminare has emphasised is that TM requires a synthesis between technology and Operations to maximise its contribution to improving performance.

Even before the Steer report GW had been looking ahead and as a result Operations is reorganising with new roles which will drive the development of TM, ARS and related systems from within the Route. It helps that these systems are all from the same supplier. Indeed, GW believes that the reason why the Route has made such 'significant progress' with TM, compared with other locations, is because TVSC is a truly integrated system on an integrated railway.

Isolated TM aids the signaller

Thales' ARAMIS Isolated Traffic Management went live at Cardiff Rail Operating Centre in January this year, followed by Upminster Service Delivery Centre (SDC) in July. These were the two Early Deployment schemes ordered under Network Rail's original TMS procurement programme.

As Steer found with Luminare, growing the use of the ARAMIS facilities by staff at Upminster SDC has been a 'challenge'. User groups have been meeting to understand concerns.

Isolated is the simplest form of TM and provides what are termed Operations Decision Support Tools (ODST) within the existing signalling process. In plain English Controllers and signallers use the TM to inform their operating decisions, which are then implemented manually.

With a short, simple, route like Thameside, (London, Tilbury & Southend in BR-speak), it is easier to quote situations where ODST has contributed to improved performance. I instance several examples in the article.

One followed the imposition of a 20mile Emergency Speed Restriction (ESR) on the Down Main Line at East Ham due to a rail defect. ARAMIS was used to run simulations of train services off-line.

These enabled the impact of the ESR to be quantified in terms of primary delay minutes and the resulting schedule 8 payments to c2c. Based on these figures it was decided to rectify the rail defect overnight with alterations to the last few services to provide the permanent way staff with sufficient access time. This scheme was successful and, of course, minimised the impact of the rail defect on passengers.

Not surprisingly Platform Docker is proving valuable. For example when a passenger became ill on a train approaching Fenchurch Street, Platform Docker was used to simulate the options in case the passenger was unable to walk off the train. The platform was rescheduled swapping with another service.

While Thameside is the archetypal commuter railway, the route does handle freight traffic. Upminster is using ARAMIS to track early or

late running freight services entering Thameside via the Barking flyover.

Although lacking the power of a fully Integrated system, ODST helps controllers and signaller make better decisions faster. And while the Platform Docker has taken the limelight, Train Graphs are also proving their worth, providing a comprehensive picture of potential conflicts avoiding the need to make repeated checks using other systems.

It is still early days at the two Early Deployment Schemes. Isolated TM is certainly helping controllers and signallers. However, during high-impact incidents, typically involving around 30 PPM failures, it has proved difficult to keep ARAMIS in step with live alterations.

On one day in August, for example, Thameside had two major incidents to manage between 16.30 and 21.00 together generating over 1,000 delay minutes and more than 70 PPM failures. During this disruption ARAMIS was unable to be used or consulted due to the sheer volume of service alterations.

One suggested upgrade is the ability for TM to use service alterations entered by the Customer Information Manager into the system used to provide messages to TOC staff such as cancellations and short train formations. A programme of enhancements is being developed by Network Rail and c2c with Thales.

Southeastern's new Operations Control System

You don't necessarily need a Traffic Management system to manage traffic. Southeastern has just commissioned a new Operations Control System(OCS) at its Kent Integrated Control Centre (KICC). This brings together three sets of data: timetable/train planning; rolling stock diagrams; and train crew diagrams. Tracsis was awarded the contract to supply and integrate the systems using its Attune4C timetable editor and TRACSEnterprise – the company's stock and crew editor.

Attune4C incorporates all of Network Rail's train planning rule, such as headways, Sectional Running Times and junction planning. TRACSEnterprise provides two facilities: Resource Management and Resource Planning. For the SE OCS the key functions are rolling stock planning, train crew shift planning and real-time management of stock and crew.

Attune4C offers the same facility to work off-line as Traffic Management. Applications range from testing Very Short Term Plans to contingency planning. A controller can take a copy of the current situation, resolve specific issues off-line and then 'publish' the revised plan back into the live system for use by operators.

Attune4C is managed through a series of screens. For example the 'trains and stops' view provides a split screen, one half lists all trains, colour coded in order of lateness. From this list a specific train can be selected with its current location, stopping pattern, arrival and departure times, lateness and other information displayed in the other half of the split screen. Tools allow the train plan to be edited off-line. For example, a 'nudge' feature can be used to move a train a couple of minutes earlier or later.

In specifying OCS SE added further details to the basic running data for each train. This includes the names of the crew, the unit diagram and the unit number. A further refinement is the names of any crew travelling as passengers on a train to their next duty.

Attune4C can also be used as a planning tool. The fact that it incorporates the planning rules means that it will highlight any potential infringements, for example platform occupation times. When planning future timetable changes, Southeastern will be able to submit a much more robust timetable to Network Rail.

TRACSEnterprise integrates train operation with stock and crew information, bringing together several paper based systems. Units can be changed to a new service in real time, for example, stepped-up. The change is then disseminated automatically across the Tracsis system.

Where a train may now complete its diagram at a different location, the 'single source of truth' concept means that the maintenance controller is provided with this information. If necessary further action can be taken to ensure the unit arrives at the planned depot.

Previously, such stock changes would have been recorded manually during the day. With this new system, each change is tracked and at the end of the day the final duty and destination can be fed into the asset management system.

With crew, a data base of the diagrams for drivers and train crew shows signing-on and off times and the type of shift. Calling up a driver from the list on the screen shows the trains to be worked during the shift and when a break is taken.

Rather like Attune4C, this system enables perturbations to be managed in real time. For example, if a driver phones in sick, their work can be allocated to a spare with the system checking for location and availability.

Another facility is the ability to create a new diagram and allocate the required train crew. This is particularly valuable in the event of a major perturbation, complementing the ability to create an emergency timetable with Attune4C.

Planned developments include, automatic production of a signaller's simplifier, a link to rolling stock management systems plus, of course a connection to the railway's LINX communication system.

Much more detail on these three systems in the column. And the overriding message is that 'digitalisation' is essentially a cultural rather than a technical issue. For a signaller coming off an N/X Panel to a computer-based work station is a big cultural jump. Add TM and the difference is even greater.

I notice this with my granddaughters using their i-Phones, when I realise that I am only scraping the surface of the capabilities of my smartphone. The way forward as TM spreads is the equivalent of a tech-savvy granddaughter on the signalling floor.

New Train TIN-Watch

With just over two months to go to midnight on 31 December, when non-accessible rolling stock (theoretically) turns back into pumpkins, new fleets are continuing enter the Table – but nowhere near fast enough. This month's newcomers are the Northern Class 331 EMUs and the Abellio Greater Anglia Stadler Class 755 bi-modes.

At least DfT and Train Operators are finally admitting that derogations from the accessibility regulations are inevitable. And politicians are starting to capitalise on old stock running on into 2020. However, with the first Hitachi 9-car Class 801 accepted it looks as though LNER will have withdrawn its IC125 fleet by year end.

Roger's Blog

My visit to Doncaster at the end of September to see Bombardier's new level crossing was a great day out. After observing the crossing at work we went to the nearby signal box to see the new technology from the signaller's perspective. Excellent journeys with LNER both ways.

Then it was off to the Modern Railways Rail Vehicle Enhancements show at Derby. I know DfT has officially dubbed Voyagers 'unpopular' but I find East Midlands Railway's Meridian variant of the Bombardier DEMU a quite acceptable form of transport – I just wish the sliding vestibule doors didn't sound as though they are lubricated with valve-grinding paste.

Last year's RVE gave my note-book a good work out, but the range of exhibitors this year was even more impressive, keeping me busy scribbling notes and taking photos all day, except for a brief sit down for coffee and a bun – well, a piece of lemon drizzle cake, actually.

Thanks to EMR for keeping me fed and watered to and from Derby.

After that it was the Accelerate Rail Infrastructure conference. This had a stellar cast of top level speakers on a wide range of topics, plus ample networking time.

Under the Chairmanship of Tim Wood of Northern Powerhouse Rail everyone was encouraged to forthright. The depressing consensus was that in terms of infrastructure enhancements the boom times are over and industry has entered the 'bust' phase of the cycle. Rolling stock is not far behind.

Next week our industry will come together at Richard Hope's funeral. Richard was a few years older than me but our careers were similar, we were both engineering apprentices – he with GEC – and we first met after he joined Railway Gazette and I was in the English Electric Press Office.

However, he had a much more adventurous life, including having the Gazette offices visited by the Special Branch and putting down the track circuit clips when he was involved in the Wembley accident in 1984. Press trips with Richard were never dull, with tales of hair raising incidents during his foreign travels.

November starts with the Railway Industry Association annual conference, continues with the always excellent Waterfront Rolling Stock Procurement Forum and ends with the Golden Spanner Awards where I will be handing out 25 trophies. I'm told that with over a month to go demand for seats has already topped last year.

Time for my annual visit to our local auto factor – 10mm spanners this year.

Roger