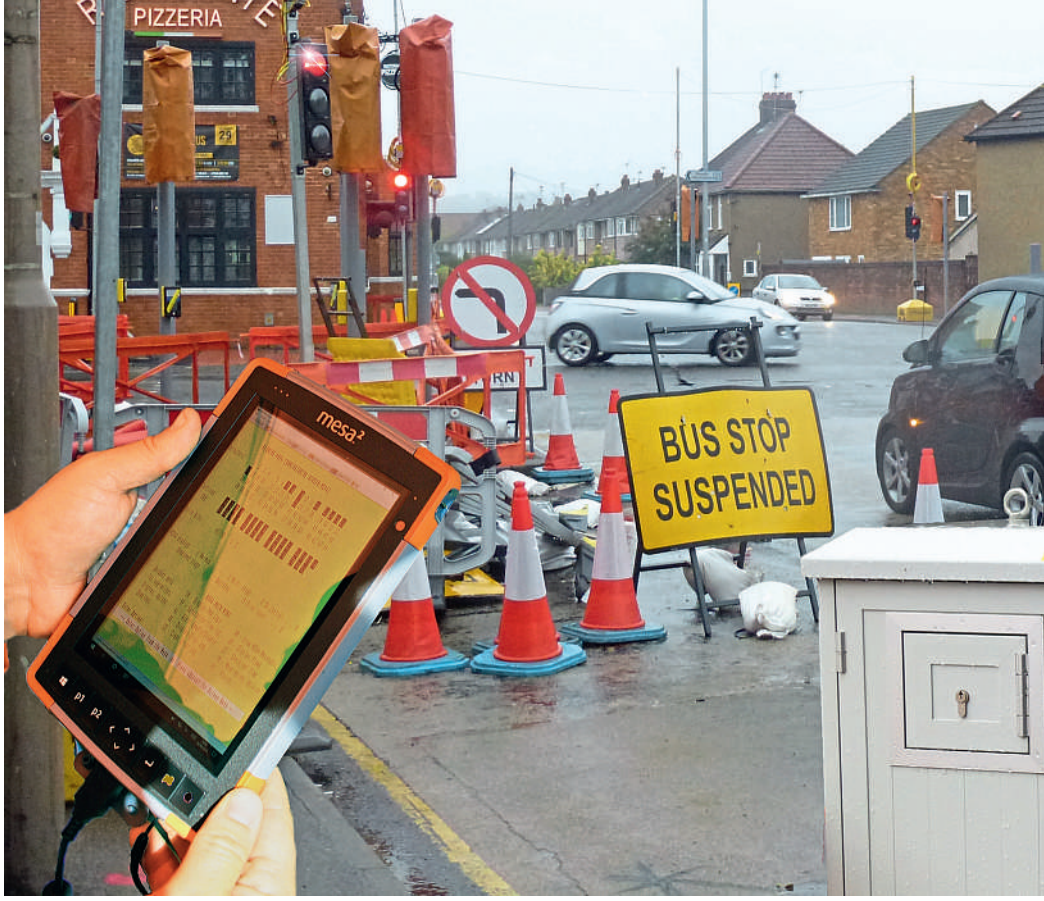
Ready Steady GO!



Faulty traffic lights are the bane of motorists and pedestrians alike. Keeping traffic safely on the move as new and improved signals are installed and tested calls for deft fieldwork in all weathers. For one company, the Mesa² rugged tablet proved to be just the job, as **Barbara Sanner** reports

A lot of detail and data goes into designing and maintaining a well-functioning traffic control system, which is where Dan Preece and his Worcester-based company, Integrated Traffic Services[1], shine. Since 2003, the business has specialised in traffic signal design and validation across the British Isles.

The work involves visiting junctions and roundabouts, connecting to on-street equipment, and gathering data to ensure that traffic flows efficiently and safely. Due to changes in traffic control technology and the outdoor work environment, Preece needs equipment that is agile, efficient, and versatile. As both the company's managing director and executive engineer, he seeks out new, compliant equipment for field testing. To make his work more efficient and accurate, he found a perfect fit in the field-computing solutions of Juniper Systems Limited.[2]

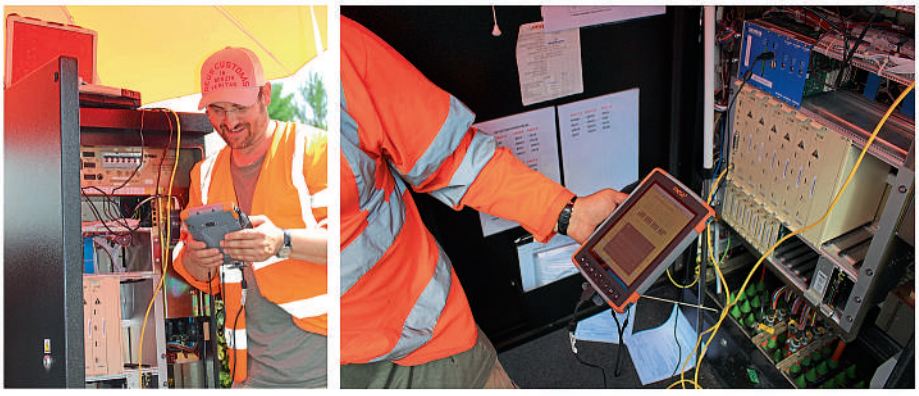
Bridging the technology gap

Traffic control system design and validation is a several-stage process. First, a junction where signals need to be improved or installed – is assessed, and measurements taken. Assessments include saturation flow of vehicles crossing the stop line, cruise speeds, number of vehicles, and many other variables. Details for detector placement and factors affecting site design are recorded.

Once those measurements are recorded, a design is created, and Preece offers recommendations for building or configuring the traffic system. When implemented, he returns to the site to validate the system. "'We plug into the control system or traffic signal controller and observe driver behaviour, altering parameters in real time, watching the effects. It's very involved and must be done on the street", he explains.

Prior to wireless communications, connecting to the control system was done via an RS-232 serial interface. That required equipment such as a handset, laptop, pen and paper, and other items to be carried into the field. "It meant scribbling details on a piece of paper or the site drawing, or entering it into a laptop cradled in my arms. This isn't easy when you're walking a long way in driving rain to take measurements", he adds.

As technology has progressed, more



"It's made the job easier and is even changing the way I accomplish my tasks" says Dan Preece

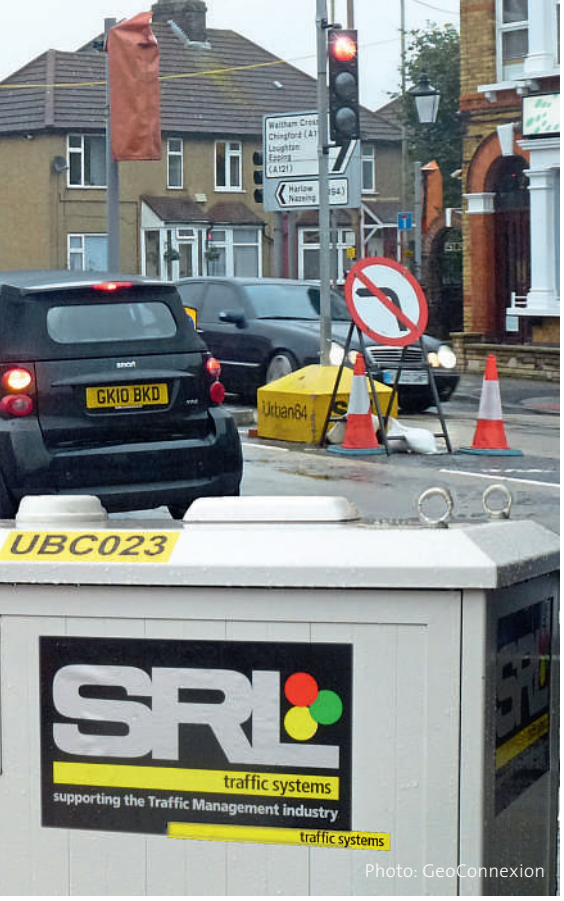


Photo: GeoConnexion

equipment has become web-interfacing, requiring a system that can handle a variety of connection types. "Now we're looking at IP connections to some equipment", says Preece, who adds that manufacturers of traffic signal controllers have numerous methods for interfacing with other equipment. "I deal with a lot of old controllers, so you need devices that are flexible enough to connect with both legacy and newer equipment".

Tailor-made for the job

The Windows-based Mesa²™ Rugged Tablet from Bromsgrove-based Juniper Systems, proved to be tailor-made for the job, connecting to both traditional serial ports and new systems via Wi-Fi. Not least, it provides fast access to previously-recorded technical information and design documentation.

"That documentation is so essential', says Preece who notes that during the validation phase the Mesa² is more than just a terminal to connect to traffic signals. "It's a handheld computer that lets me open a Word or Excel document with details about how the junction should work. I can quickly check a phase or input number, rather than referencing it on paper or a laptop. I just tap and switch between windows on the Mesa2. What's more, and due to the size of the device, I don't have to stay by the controller cabinet when validating; I can view data and walk around the approaches at the same time". He relates how this has been applied in practice:

"On a recent scheme, I was connected to the controller over Wi-Fi. I walked up an approach to find a detector, and verified its proper operations by analysing the controller data on the Mesa2 in real-time. I then amended the dataset based on the detector location, marked up the site drawing's PDF, uploaded the revised dataset to the controller, and monitored the effects – all from the side of the road, 200 metres away from the controller cabinet".

Traffic control technology is highly complex, and usually merges multiple systems, such as controls for pedestrian crossings, turns to a specific direction, bypasses for emergency vehicles, and oversized commercial loads. Preece admits that while fieldwork could be achieved using a laptop, it's not the most comfortable of devices to use on-site. "And because the Mesa² is rugged, I don't worry about dropping it or placing it on rough surfaces It's made the job easier and is even changing the way I accomplish my tasks.

A workhorse on the road

Working by the roadside poses many risks and challenges. Weather, terrain, and safety are all variables that Integrated Traffic Services has to consider when selecting equipment. The work entails long days and demands tough mobile computing devices that can work for extended periods.

The Mesa² is designed to handle virtually any environment, making it perfect for wet weather conditions. Rated IP68, it withstands dust, dirt, sand, and rain, and is resistant to water submersion up to 1.5 metres for up to 30 minutes – in case it falls into a puddle or a duct chamber full of water. The high-visibility, seven-inch touchscreen provides superior clarity, and is capacitive, so it keeps working in any weather or temperature conditions. The work continues, even with rain on the display. "I used to go through laptops like A4 pads! And yes, my Mesa² has had a thorough soaking on several occasions. But you just blow the rain off and carry on", says Preece. It keeps the job on schedule, aided by a high-capacity hot-swappable battery that can power the tablet with the screen in use for up to 10 hours at a stretch, "It will easily last a long day without the performance level declining or the screen dimming", he notes.

City environments with busy traffic junctions pose another challenge, says Preece: "You want your computer to be less attractive to thieves if you put it down. What's really useful about the Mesa² is that It looks like a work device and can be kept with you everywhere because it's so compact".

Projects are overall much more efficient thanks to the Mesa². "I was at a job with seven junctions to evaluate. Every time I saw something that needed to be changed, I plugged it in to the controller and had a look. It was a real benefit having all that documentation from the scheme folder on-screen – the job was finished much quicker'.

Getting the green light

For Preece, the Mesa² has been a valuable addition to his inventory of field gear. "It was the only handheld computer we considered that had all the features, operating system, and layout we needed to be useful on the street', he says.

Integrated Traffic Services also uses the device on fault-finding and troubleshooting assignments. "I go to junctions where poor performance has been reported and, as with validation, need a device that will connect with whatever equipment is there, and stand up to the elements and abuse to which on-street equipment is subjected".

At the cutting edge of the industry, the company conducts substantial development work, and Dan Preece can be found singing the praises of the Mesa² at presentations and seminars. Based on practical experience, he sees a bright future preconfiguring the tablet with software needed by others in the industry. "It works extremely well. It's been a useful bit of kit and really enhances the way I work."

1. www.integratedtrafficservices.com
2. www.junipersys.com

Barbara Sanner is the Marketing Director at Juniper Systems Limited (www.junipersys.com)

MESA²™ RUGGED TABLET

- Rated IP68, waterproof and dustproof
- Shockproof, withstands temperature swings
- Microsoft® Windows® or Android® OS
- Li-ion battery provides 8-10 hours operating time
- Optional internal battery offers 4-5 more hours
- Multiple wireless connectivity options
- 7-inch display with capacitive touchscreen
- IllumiView™ technology delivers amazing visibility
- 4 GB RAM; 64 GB or 128 GB flash storage