

Smart radar for traffic data collection

Peter Eccleson



RADAR – THE BEST CHOICE FOR LOOP REPLACEMENT



- ✓ Highly accurate classification (7 categories)
- ✓ Four dimensions (range, speed, azimuth & elevation)
- ✓ Patented 4D/HD & 4D/UHD technology
- ✓ Unaffected by sun, shadows, darkness, fog ..
- ✓ Highly configurable through set-up software
- ✓ None intrusive installation
- ✓ Maintenance free
- ✓ **A Future Proof and highly flexible solution...**

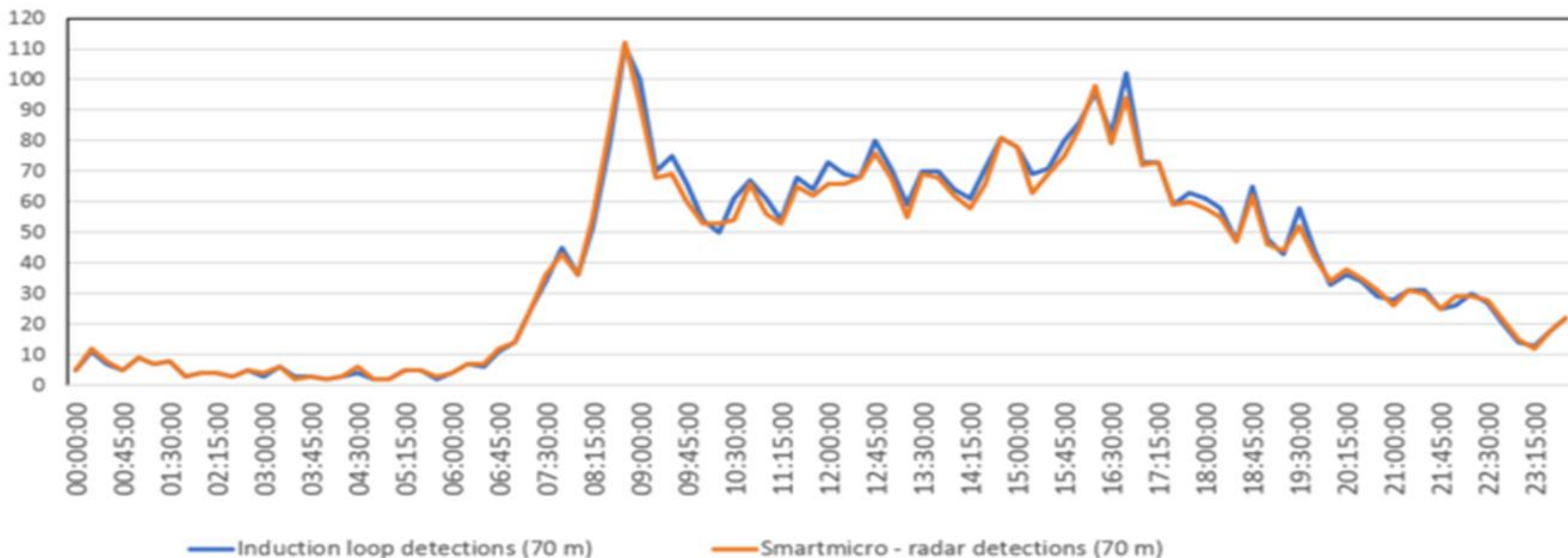


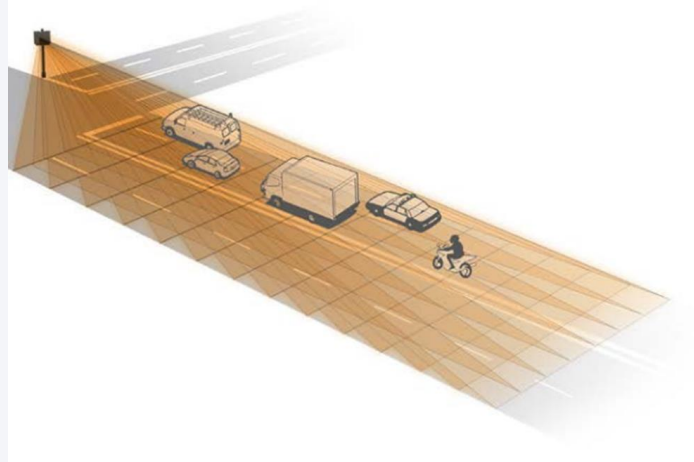
Partnering



In the U.K.

PERFORMANCE AGAINST CONVENTIONAL LOOPS





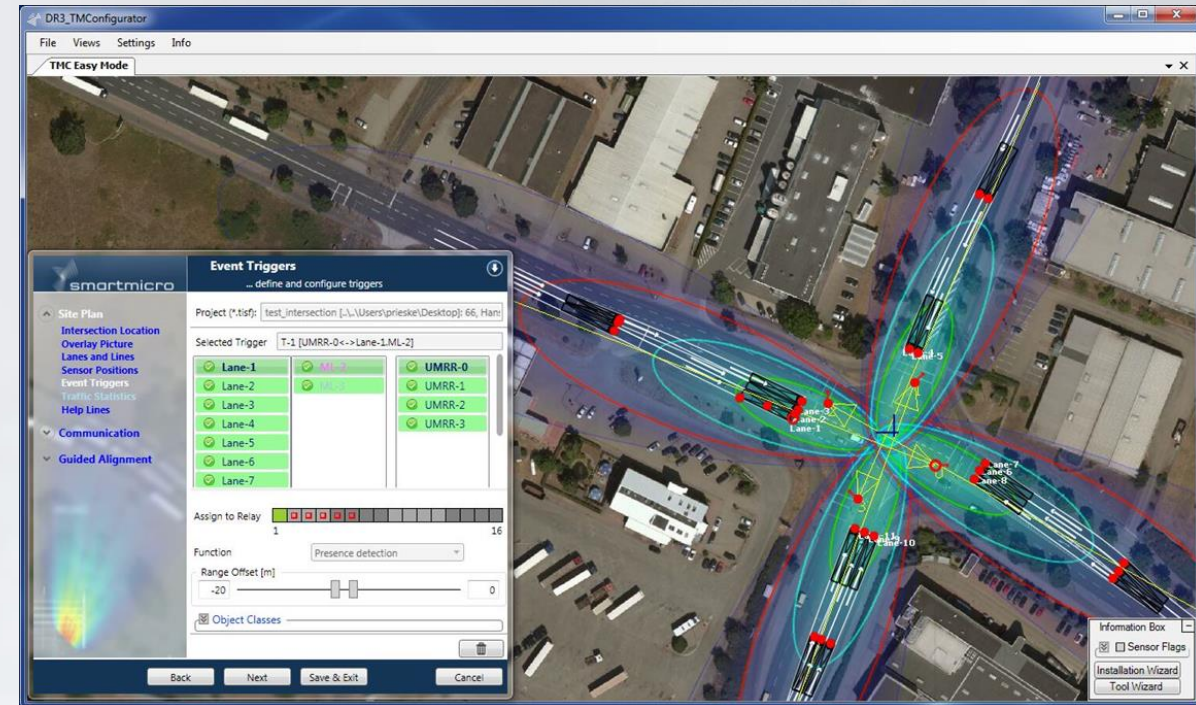
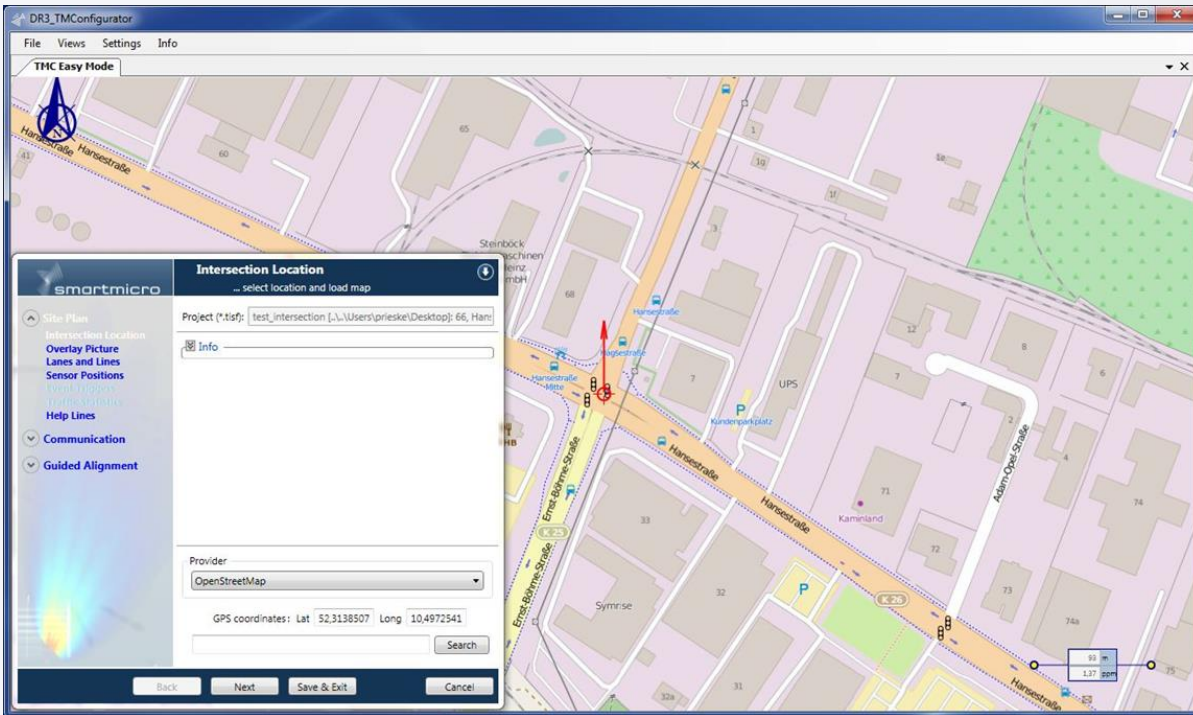
- ✓ Covers up to 6 lanes of traffic
- ✓ Multi lane and multi vehicle detection
- ✓ Simultaneous detection of up to 126 traffic objects
- ✓ Virtually unaffected by adverse weather
- ✓ Up to **32** detection Zones - effectively replaces 32 loops
- ✓ Stop & Advance detection with one single radar
- ✓ Small size (110 x 99 x 30.4mm), low power consumption <5 watts
- ✓ Range 219m

TYPICAL RADAR INSTALLATION



Average mounting height 6m – use 3m TRP extension pole



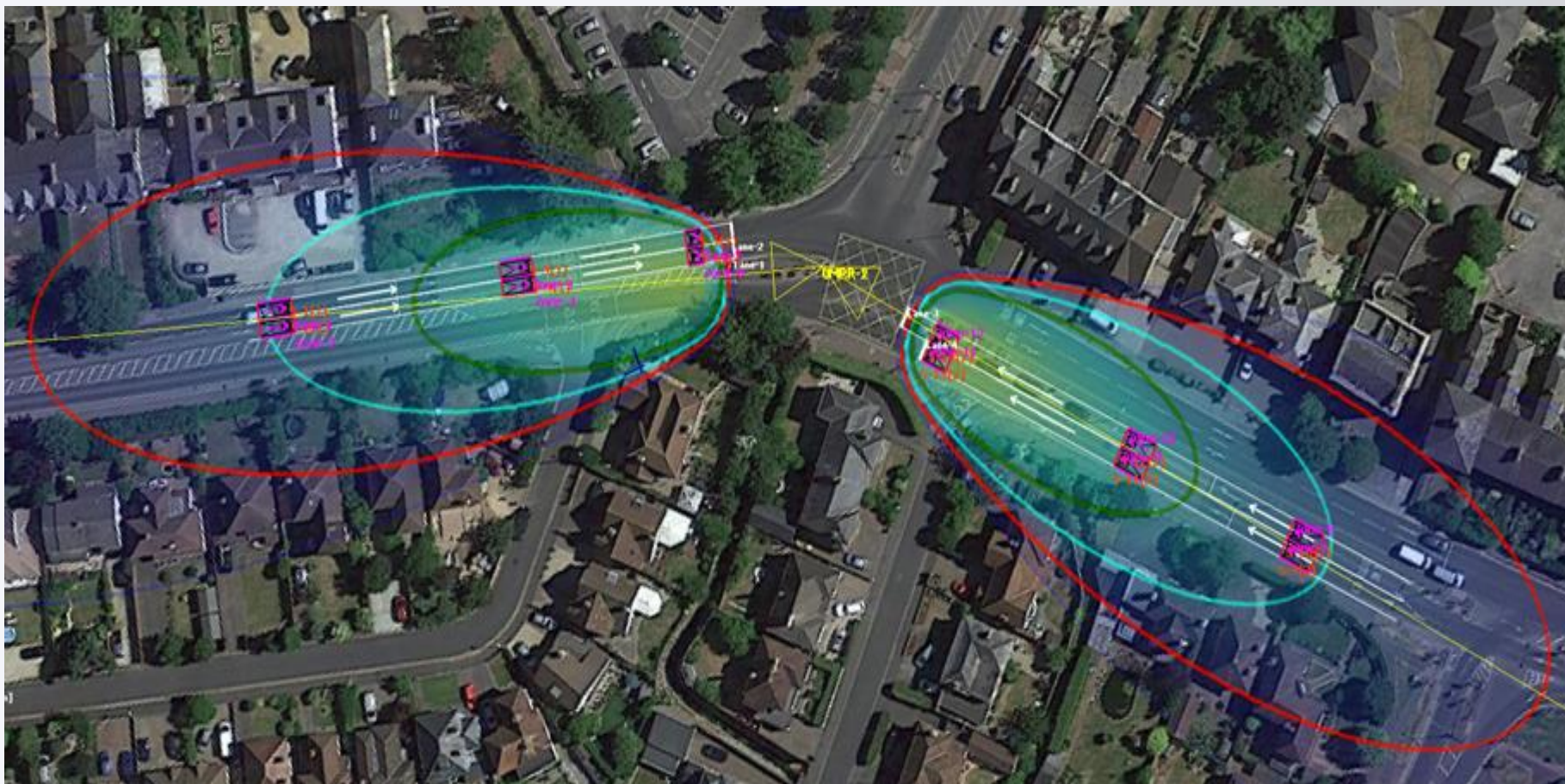


Easy-to-Use Set-up software (free issue)

- Intuitive guided 7 step installation process
- One window for map and one for settings
- Guided alignment

- Local awareness
- Multiple trigger options
- Real time traffic data and statistics

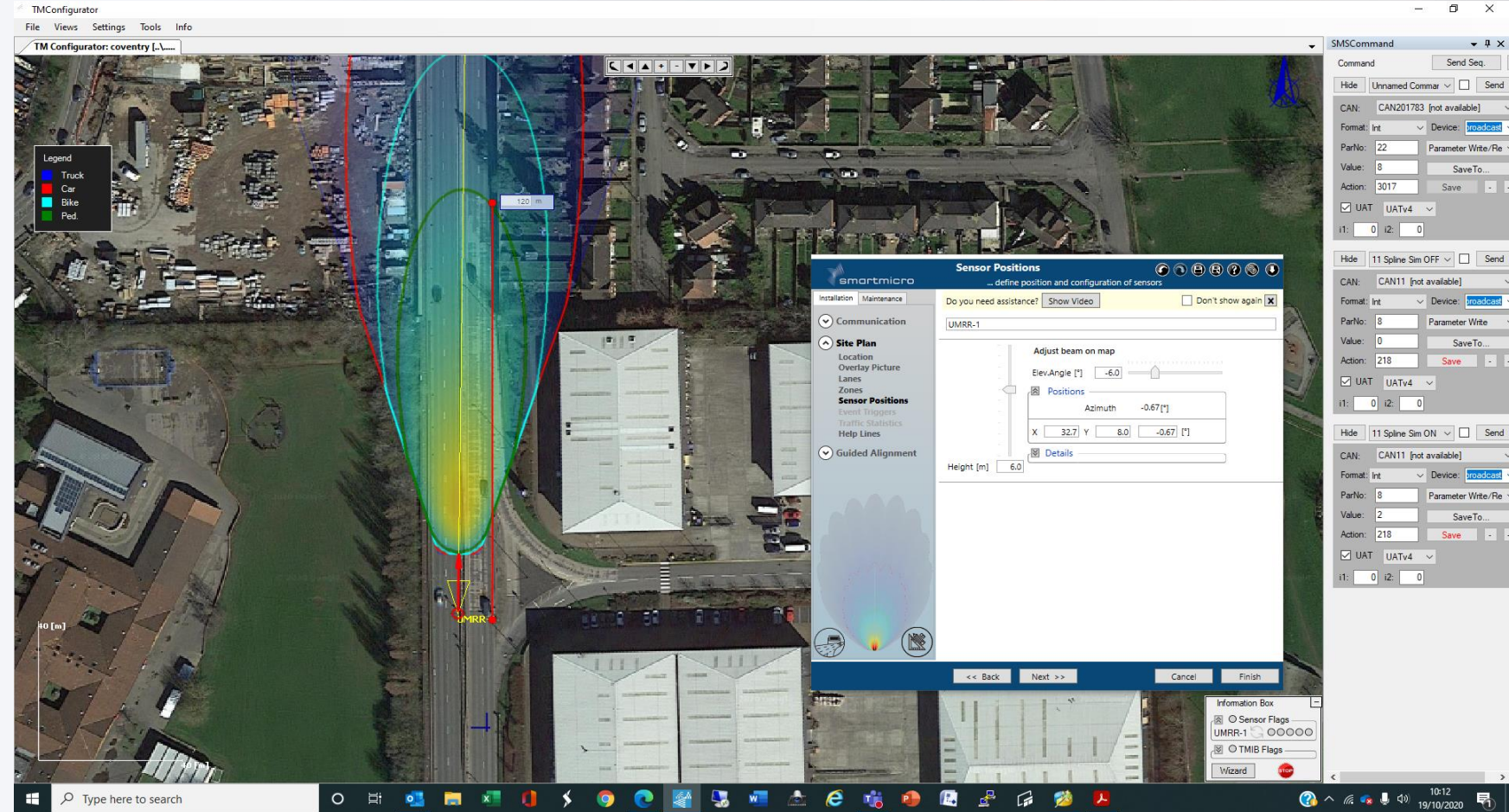
TYPICAL MOVA SET-UP



TAUNTON

MOVA site

A38 Wellington Road



TRAFFIC DATA COLLECTION

“NOVUS”

Data aggregator for roadside installations



- ✓ Capturing vehicle, cyclist and pedestrian statistics
- ✓ Providing a tool to manage the Highway networks
- ✓ Integrates with our radars to add data aggregation to new or existing sites



DEVELOPMENT

- NOVUS was originally developed following a grant award from Innovate UK
- Initial design was based upon 'linux' operating system
 - Completed to original specification and tested extensively in Portsmouth
 - Received special mention and accolade from Innovate UK for 'delivering' specification within timescales and budget
 - Suspended further linux development in 2020
- Development was continued 2021 but on a Windows™ platform to accommodate the smartmicro™ TMC software which could be stored within the device
- Development has continue to date on Windows™ platform





DESIGNED ON A COTS PLATFORM



Powered by:



- 2.4Ghz processor, 8Gb RAM
- NOVUS can be installed in the traffic signal controller mounted on a DIN rail or in an IP67 junction box on a pole or lighting column depending on its application.
- Power supply is 12vDC from a separate PSU
- Supports up to 4 radars
- Onboard 256Gb data storage - can be collected locally or downloaded via optional cellular modem or ethernet



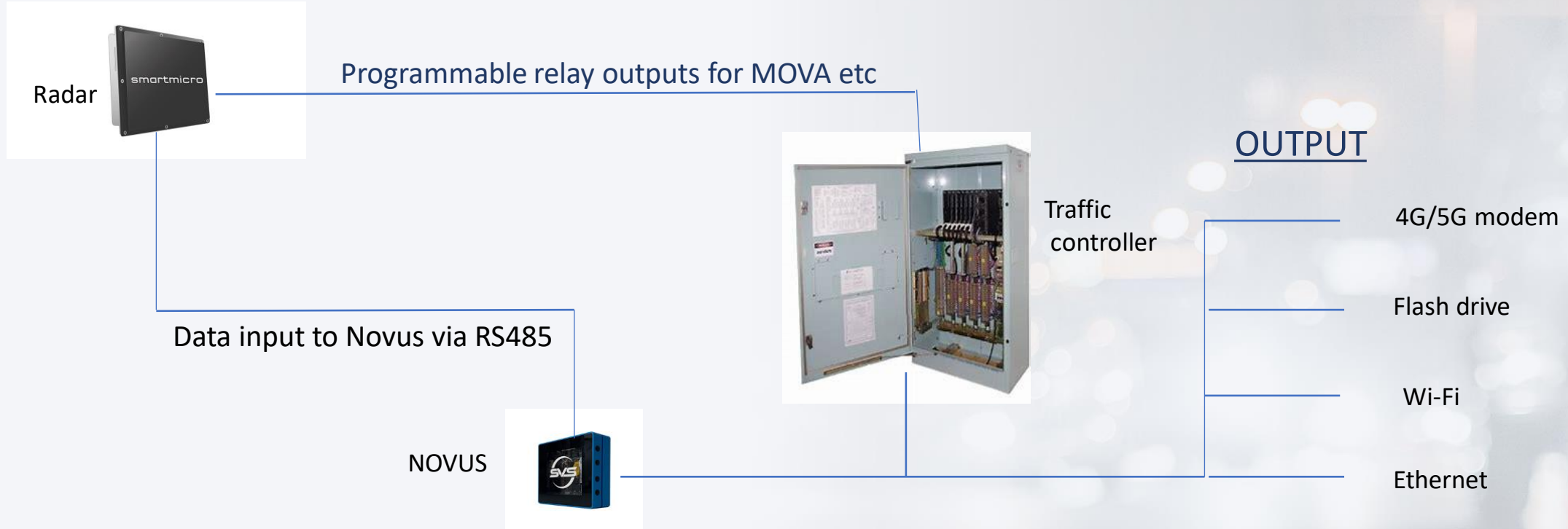
Department
for Transport

The Transport Technology Forum (TTF),
funded by the Department for Transport



UK Research
and Innovation

Delivered by LCRIG on behalf of DfT
and supported by Innovate UK



- NOVUS allows data collection without additional equipment to maintain at the roadside
- 8 programmable relays from the radar to the controller I/O for detection triggers

ACTIVE TRAVEL DATA COLLECTION

Local Authorities have installed UMRR-11 and NOVUS to collect cycle and pedestrian data as part of Active Travel initiatives



ACTIVE TRAVEL DATA COLLECTION



- Data collection along a cycle and pedestrian route the City of Plymouth
- 20 UMRR-11 Type 132 (77Ghz) installed on lighting columns with Novus
- Installations are easily moved to other sites in the future

Client downloading data in .csv format over local Wi-Fi



TMConfigurator

10.80.2.179

Live Video

Not secure

192.168.11.21/en/i...

Login

UMRR12 35AEF





Objects

Classes

0:Undefined

1:Pedestrian

2:Bicycle

3:Motorbike

4:Car

6:Transporter

7:Short Truck

8:Long Truck

M275

PORTSMOUTH

TM Statistic Viewer

Statistic Messages

Counting Results

Statistic Boxes

SQL Export

PerVehicleCount

Help

Manual Export

Periodic Export

?

Create

☒ Auto Export

Setup...

UMRRID	BusNo	MilliSecs	Seconds	Time	ObjectNum	ObjectID	ML/(Sensor	L	Class	Speed [m/s]	Speed [mph]	Heading	MeasZone	Length [ft]	Class (Sensor)
0	41	692	1616067894	18/03/2021 11:44:54	0	108	6	7	4	21.85	49	-166.4612	G	16	4
0	41	992	1616067893	18/03/2021 11:44:53	0	108	8	9	4	21.775	49	-166.4612	I	16	4
0	41	192	1616067893	18/03/2021 11:44:53	0	107	4	5	8	21.95	49	-166.4612	E	58	8
0	41	292	1616067892	18/03/2021 11:44:52	0	105	1	3	4	19.775	44	-165.0452	B	16	4
0	41	92	1616067892	18/03/2021 11:44:52	0	106	4	5	4	25.625	57	-166.4612	E	15	4
0	41	192	1616067891	18/03/2021 11:44:51	1	105	2	2	4	19.5	44	-165.0452	C	15	4
0	41	192	1616067891	18/03/2021 11:44:51	0	105	0	1	4	19.5	44	-165.0452	A	15	4
0	41	692	1616067890	18/03/2021 11:44:50	0	104	7	8	4	23.6	53	-166.4612	H	15	4
0	41	991	1616067887	18/03/2021 11:44:47	0	99	7	8	4	22.375	50	-166.4612	H	15	4
0	41	691	1616067887	18/03/2021 11:44:47	0	101	2	2	4	19.95	45	-165.0452	C	16	4
0	41	191	1616067887	18/03/2021 11:44:47	1	104	6	7	4	23.55	53	-166.4612	G	15	4
0	41	191	1616067887	18/03/2021 11:44:47	0	103	5	6	4	22.525	50	-166.4612	F	15	4
0	41	891	1616067886	18/03/2021 11:44:46	0	96	7	8	4	23.95	54	-166.4612	H	15	4

Information Box

☒ Sensor Flags

Wizard

STOP

Windows

Type here to search

11:47

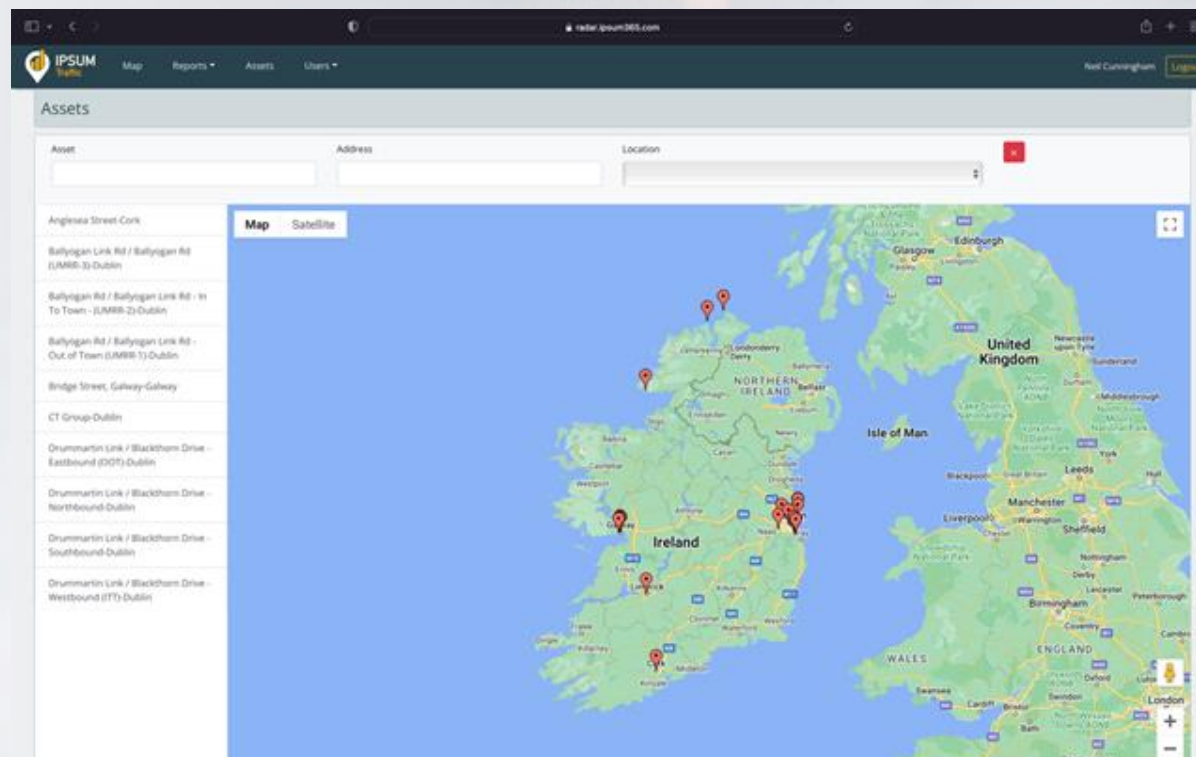
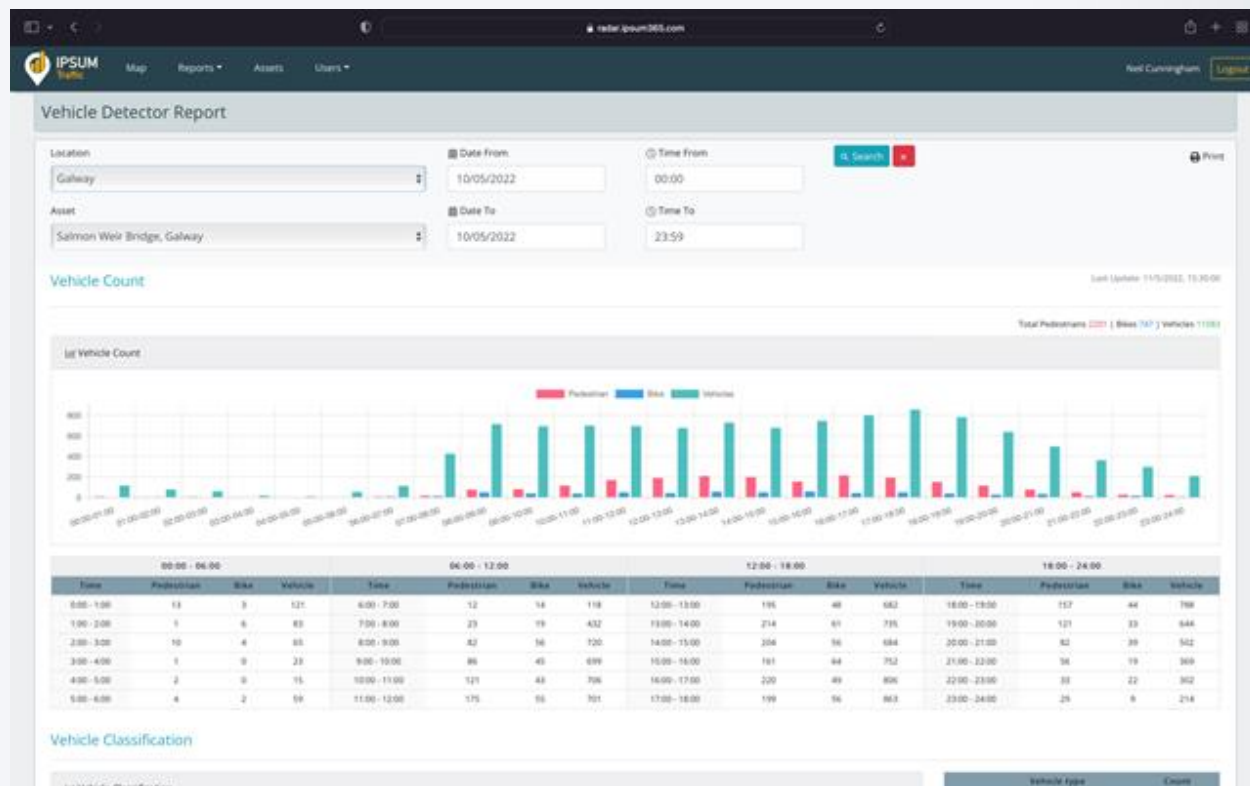
18/03/2021

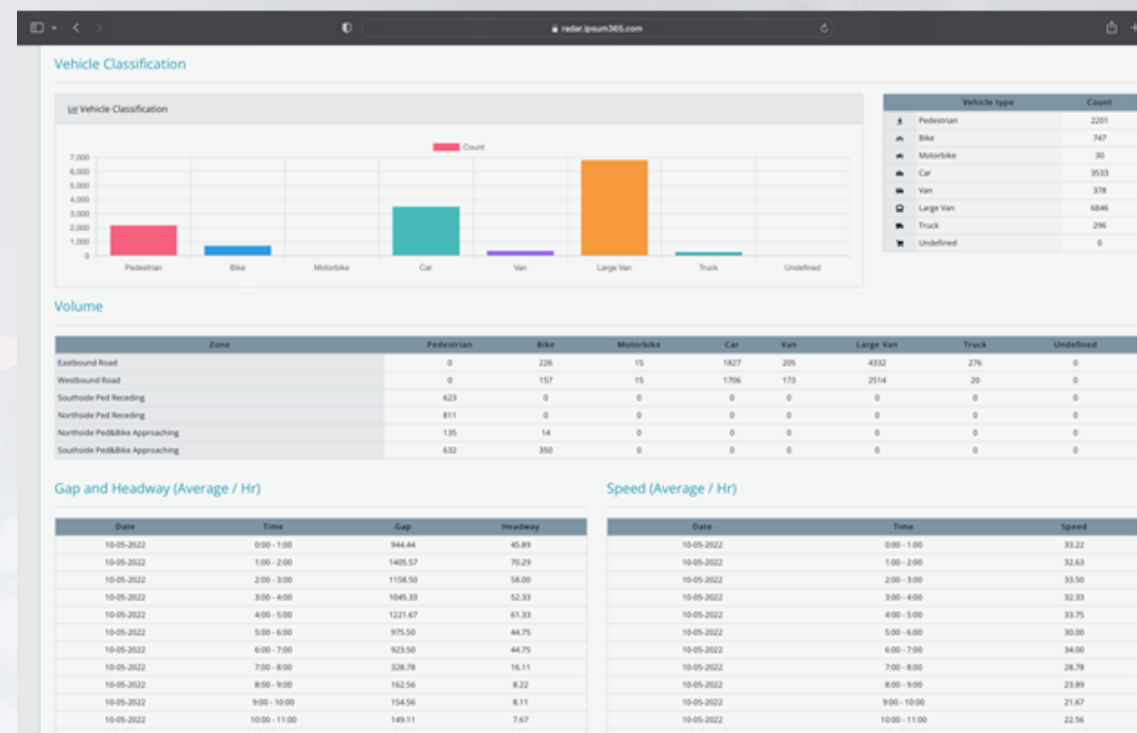
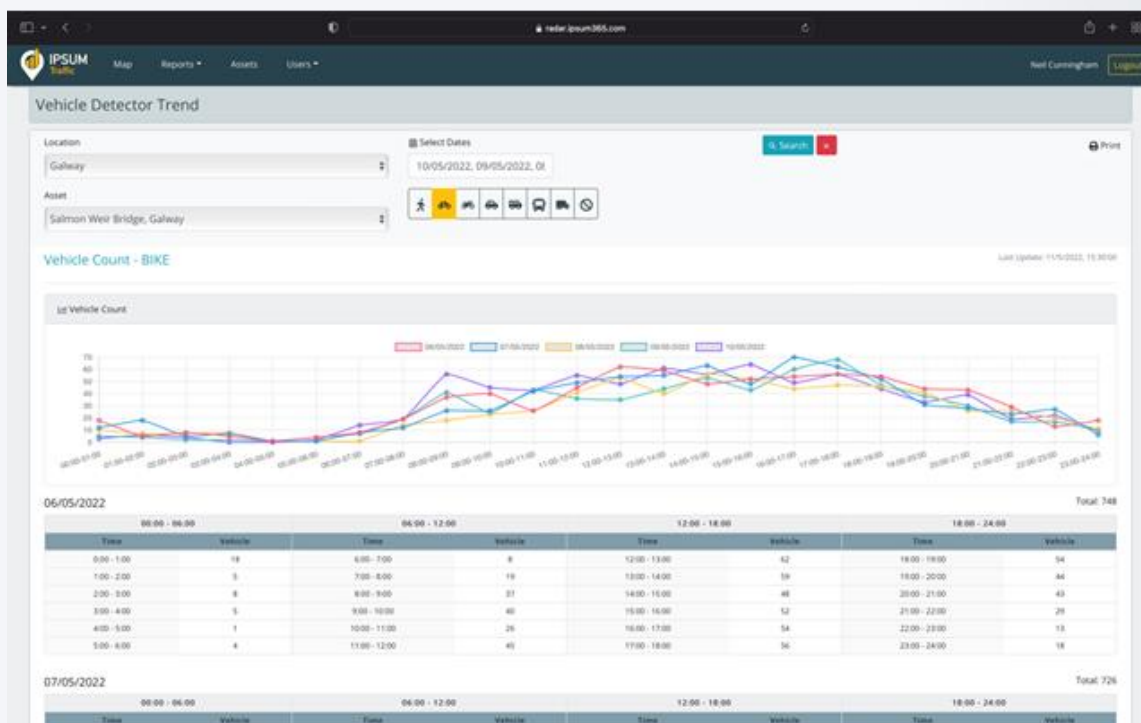


Portsmouth Test Site

- Installed alongside permanent site
- Counting
 - Pedestrians
 - Bicycles
 - Motorbikes
 - Cars
 - Vans
 - Short Trucks
 - Long Trucks

Comparison – 97.8%





- INTEGRATION WITH AIR QUALITY MONITOR
 - Comparative data queue lengths/congestion against air quality trends
- EXTERNAL TRIGGERS TO TRAFFIC SIGNAL CONTROLLER
 - 16 opto-isolated trigger outputs
 - 32 opto-isolated trigger outputs
- NEXT PHASE LINUX SOFTWARE DEVELOPMENTS
 - Supports web based UI
 - Allows integration with a variety of devices

Thank you.

For more information contact:

davidr@smartvideosensing.com

Tel: 02392 248250



Presentations will be uploaded onto TTF Conference Website within the next 7-10 days

