

# MERG Thames Valley Area Group TVAG

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## Email

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## Secretary

Howard Watkins M615 (taking over from Ian Bishop M3391 on 6/11/2018)

## Meetings

### Usually

TVAG meets on the first Tuesday of every month at Grazeley Village Hall, Church Lane, Grazeley, Reading, Berkshire RG7 1LD, approximately 1 mile south of J11 of the M4, just off the A33.

**tvag mon 5 aug 2019 venue: RSME (Reading Society of Model Engineers) approx postcode RG30 2BD**

**Rescheduled from Tues 6th Aug due to nonavailability of usual venue**

<https://www.google.co.uk/maps/@51.446329,-1.0042132,3a,75y,90h,90t/data=!3m6!1e1!3m4!1sZ3nqsyiFTnqbahKYgf1jNA!2e0!7i13312!8i6656>

Arrive from 7pm, sit down 7:30, finish by 10pm

£3 donation to our hosts.

## PowerPoint Presentations

[Presentations](#) from some of these meetings can be found [HERE](#).

## 2019 Meetings

January 8th

We had a workshop on surface mount soldering.

February 5th

Several members had built various MERG modules for the demonstration layouts, and these were tested.

Ian Morgan shared his progress with modifying a CANCAB to include a backlit display.

David Ingoldby shared his latest dingo mount servo test board with a new low profile 1.5" top-to-

bottom mount.

March 5th

More progress on the Demonstration Layouts.

Ian Morgan gave a presentation and demonstration of the CANPiWiCAP.

## 2018 Meetings

9th January: Howard Watkins had completed wiring of N Gauge ATC demonstration layout over Christmas. Started to test ATC with a couple of engines with standard configurations. Still need to program our own more complicated configuration to run 4 engines. Ian Morgan had working CBUS kit for use on 2nd demo board

6th February: One group worked on the configuration of Simon Robert's test board (CBUS); second group lead by Ian Morgan went through configuring and teaching the demo layout CBUS modules using FCU, and then setting up the layout in JMRI and RocRail; Ian Hart showed some new modules he is working on - some 'maxi' CANMIO boards which had the CANMIO circuitry plus the circuitry of a CANMIO daughter PCB on the same PCB. Although the modules are somewhat larger than the CANMIO modules, they are not so cramped, and avoid the stacking and stand-offs. Ian also had some 2-channel TOTI boards and a module that provides an isolated +/- 5VDC supply from a single 12VDC supply, ideal for providing train on track detection on an analogue (DC) layout.

6th March: Howard Watkins; discussion of the ATC challenges and agreement on running single engine and set of movements; Simon Roberts presented revised baseboard for CBUS layout including recesses for mounting layouts on top of each other and location of track & points; All - discussion on building next layout, agreement to mount 3D printed servo mounts and servos on top of board to show function

3rd April: Howard Watkins gave a short talk on the trials and tribulations of setting up the ATC layout; Ian Hart showed his through-hole CANCAB; David Ingoldby showed his home-made CNC milling machine plus some samples of PCB drilled and engraved with it. These included an N scale colour light signal with junction 'feathers'. Alan had laid track on the Simple CBUS layout, including modifying the points to be DCC friendly - further work wiring the CBUS modules together.

1st May: Visit from Martin Perry to present the new code of conduct.

5th June: Ian Morgan describes the Channel 5 TV competition he is participating in (Basingstoke club) and how they won their heat - theme around world - father Christmas. Demonstration of CBUS and FlimConfig to a new member.

3rd July: Howard Watkins - update on the ATC challenges; Ian Morgan updates on the model railway competition (final); Ian Hart demonstrated the CANMIO and daughter board.

7th August: David Hills - progress on the SMD version of his servo control board for 4mm vehicles; Tony Lamb showing his work to offer cheaper RFID technology, technology that works around the charge-read delay time for faster moving trains

4th September: Further work completing the Simple CBUS demonstration layout.

2nd October: Ian Bishop announced standing down on 7th anniversary of TVAG; Howard Watkins showed a working version of the ATC layout; Ian Morgan talked about the build he did for the Radio

Times anniversary; discussion of the components needed for the third demonstration CBUS/JMRI layout

6th November: Ian Morgan brought along his "Radio Times" layout as featured in, er, The Radio Times! Howard Watkins agrees to take over leadership of TVAG.

4th December: Howard Watkins gave a presentation on using groups.io; Roger Noble discussed updates to using specially developed boards for using linear stepper motors for point control and for controlling Dingham uncoupling magnets; Mark Riddock described the use of an Arduino to provide interlocking of point levers in a CBUS environment.

## 2017 Meetings

3rd January: Ian Morgan - Demo DCC and servos. Ian has modified an 8 channel steady state DCC accessory decoder (kit 53) to drive two SERVO4 modules (kit 75). There is a TB that covers such a modification, but he has gone further and used some of the spare PCB area and tracks on the decoder module to add some indicator LEDs, and a 12VDC supply. He can drive it using his Sprog and laptop, but will work with any other DCC system (e.g. NCE).

Planning 1: discussion on what type of projects, skills and workshops we want to cover over the next 12 + months

7th February: Ian Morgan - a presentation on controlling analogue trains from CBus, using an Arduino and off-the-shelf modules. Demonstration of the prototype and the software required to provide 6 analogue controllers for the new Basingstoke club layout. The 'clever' bit of Mark Riddoch's concept is that it can be used with Merg CANCAB controllers, or alongside a CANCMD for a layout that is part DCC and part analogue, or connected by a CANUSB to a PC running JMRI, allowing JMRI throttles, or mobile phones to control the analogue trains. Simon Roberts: Demonstration of his work in progress 5 lane traverser automation controlled by an Arduino nano and using an H Bridge and NEMA17 stepper motor.

Planning 2: Agreement to develop

- Topic 1 Use a N gauge layout (small size/portable) to build and demonstrate many of the MERG technologies & interests including DC, DCC, CBUS, ATC, Arduino.
- Topic 2 - Dave Hills & Mark Riddoch - 2 projects design & construct 1) a mobile decoupler (for OO gauge) and 2) a wagon turntable with stepper motor control

7th March: Ian Bishop: presentation followed by discussion of working group proposal for the development of a number of MERG technology demonstration projects that use identical (N-Gauge) track plans - tasks established for budget workup, CAD design of boards (for a presentation). Nicholas Murphy - ASUS Tinker Board £55 (similar to Raspberry Pi 3B but with 1.8Ghz Quad core A17 CPUs, 2GB Dual Channel RAM, 4K video decoding hardware, 192ks/s 24 bit audio, microphone input, no composite video output) \* this board was put on sale for a short while but no sign of a full launch yet, software for Video Acceleration seems missing at present. Raspberry Pi Zero £9.60 (same as Pi Zero with camera connector except with Wifi and Bluetooth 4.1/BLE added).

4th April: Howard Watkins: Automatic Track Control (ATC) demonstration. Andy Moore: analogue camera in gauge coach 5.8ghz receiver £10 12v driving composite video. DCC track/loco - loco pickups fed to coach at moment - 4 way rectified 17-24 volts into transmitter £10 - buck converter dropping it to 5 v for camera £6 plus few bits £s. Ian Morgan: Single channel oscilloscope 200 kHz £19

[www.banggood.com](http://www.banggood.com) kit through board only. All: Design base boards for demonstration projects.

2nd May: Howard Watkins: 1) Talk on connectors 2) A scenario for train movements with ATC 3) An update on the CANMIO kit. Ian Morgan: Demonstration of his new power/control box - see last presentation for components. All: Discussion on track layout and base boards for demonstration projects.

6th June: Dave Ingoldby: demonstration of his screw tapping machine used to automate production of his aluminium server mounts. Howard Watkins: 1) kitlocker update: Megapoints board: points and semaphore signals with bounce, currently a surface mount, through hole version will be joint venture with Howard to make a MERG kit 2) Design spark master class - servo1 board with remote control to set up movement/endpoints (setting box); 3) pattern makers brass dowels 8mm into 7.5mm holes and other board coupling. Howard also showed couple of captive nuts (eg T nut). Nick Murphy: Demonstration JMRI operated mimic touch panels showing control and operation of points - used two £50 tablets with track plan - Raspberry Pi 3 running JMRI, simple server option, wireless to panels running JMRI: client option. Simon Roberts: surprised us by bringing in a set of CAD designed, laser cut MDF layout baseboards (2 x 3ft) for the demonstration project

4th July: Ian Morgan: demonstration of his fluorescent lights emulator Arduino nano and a few white LEDs. Started work on setting out the N-gauge track for the ATC demonstration layout.

1st August: Dave Ingoldby: Demonstration of a new Pro-to board for the control of a routed Dapol signal. Continued work on N Gauge ATC demonstration layout.

5th September: Mark Riddoch: Workshop constructing RJ22 cables. Continued work on N Gauge ATC demonstration layout.

3rd October: Ian Morgan: Demonstrated creating a layout in JMRI for a CBUS layout. Continued work on N Gauge ATC demonstration layout.

7th November: Chris Barker Demonstration of the SHAG CBUS demonstration layout. Ian Morgan: USB charger socket. Howard Watkins: demonstration of a point motor made in Prague called the MP1. Nick Murphy Gizmo 2 Linux single board computer. Continued work on N Gauge ATC demonstration layout.

5th December: Howard Watkins 3D printed rectangular wing nut mount for locking head of a bolt. Ian Morgan: LED (white) wire. Roger Noble: Arduino nano controlled points using stepper motors - review of tiny stepper motors + costs/connections. Arduino driven by CBUS or JMRI. Mark Riddoch: update on dcc servo decoder work (see last presentation for G scale with Dave Hills). Alan Whitmore: solving a problem with TOTI block control and crossing gates controlled by PMP18 using TTL log. Continued work on N Gauge ATC demonstration layout.

## 2016 Meetings

5th January: Dave Wykes - Review of Addlestone Parkway Garden Railway; Malcolm Slawson - Building points with PCB; Paul Miller - Trouble shooting: JMRI, a couple of MERG boards, an Arduino (the CAN-CBS interface and an H-Bridge), a DC and a DCC loco and a short length of track with me - Problem is to identify what I am not doing correctly (with the H-Bridge) that is stopping me taking DCC commands from JMRI Warrants and converting them to DC

2nd February: Ian Morgan - demo of £16 oscilloscope kit

[www.banggood.com/DSO138-DIY-Digital-Oscilloscope-Kit-Electronic-Learning-Kit-p-969762.html](http://www.banggood.com/DSO138-DIY-Digital-Oscilloscope-Kit-Electronic-Learning-Kit-p-969762.html); show

and tell; trouble shooting.

1st March: Malcolm Slawson - Rail stories...; Dave Ingoldby - No-Ox-ID "A Special" track cleaner; Nick Murphy - demo raspberry pi III with DCC sniffer: show and tell; trouble shooting.

5th April: Dave Ingoldby - Presentation showing how to design and build slick CBUS-based control panels using CorelDRAW and ink jet printers; 3 Part Presentation - Arduino DCC decoder: P1: Simon Hills - RS-Online's Designspark to create the PCB for the Arduino based DCC decoder; P2: Mark Riddoch - Development of the Arduino based mobile servo/stepper/led etc DCC decoder; P3: David Hills - 3D print and Arduino based multi device DCC Decoder - Demonstration running an LGB scale concrete mixer spilling smarties; Tony Witts- Interfacing CBUS to a Windows computer or tablet - conceptual stage for designing & building virtual control panels (visual basic) for running on old laptops. (19 attendees)

3rd May: Paul Miller; [Presentation](#): Using an Arduino and JMRI's OBlocks and Warrants to automate a DC layout with CANCMD; David Ingoldby: Alternative (Large) handset for MERG DCC handset kit

7th June: Nigel Phillips; Demonstration showing communication with CANUSB4/CBUS using a wireless connection and Raspberry Pi 0. Also ran FLIMconfig and JMRI through single CANUSB4.

5th July: Nigel Phillips: Workshop: Installing the nodejs program to allow multiple network connections to a MERG canusb4. Installation instruction are available from Howard Watkins.

2nd August: Ian Morgan: [Presentation](#) Introduction to the CBUS CANMIO module; Simon Roberts: Demonstrated his traverser build project and laser cutting for brickwork viaducts and power unit (plastic); Nick Murphy: Experimenting with Raspberry PI camera to sense position (image processing) of trains in fiddle yards.

6th September: Howard Watkins: demonstration of the DCC/CBUS n-gauge demonstration cabinet; demonstration of a working turntable driven by the MERG turntable PCB; Dave Hills - Update/demonstration of his G Scale cement mixer wagon with the mobile DCC decoder card.

4th October: Ian Hart: [Presentation](#) Demonstration of the CANPiWi, a PI Zero acting as a Wi-Fi Access Point connected to a CBUS layout. It allows smart phone throttle Apps to directly connect without a computer running JMRI; David Ingoldby: Demonstration of a (amazing) sound in a N-gauge diesel engine

1st November: Mark Riddoch: demonstration of a Robo Cutter.

6th December: Ian Turner: Introduction of Micromite (a Microchip PIC32 microcontroller) - a PicAxe on steroids; Ian Morgan - DCC demo for driving Servos. He has modified an 8 channel steady state DCC accessory decode (kit 53) to drive two SERVO4 modules (kit 75). Although there is a TB that covers such a modification, Ian has gone further to use some of the spare PCB area and tracks on the decoder module to add some indicator LEDs, and a 12VDC supply. He can drive it using a Sprog and laptop; Andy Brown - brought along a N-Gauge test track and a variety of RFID tags both LF (125kHz and HF (13.56MHz) to play with.

## 2015 Meetings

6th January: Howard Watkins will bring his Adafruit display (sits on top of the Raspberry Pi & is about the same size) and talk about some modifications he's made to the RFID script; Ian Bishop will have a

CANCOND and CANSERVO8 operating four servos in a sequence for a club crossing gate project; show and tell; trouble shooting; swap shop

3rd February: Ian Bishop: CANCOND and CANSERVO8 operating four servos in a sequence for a club crossing gate project; show and tell; trouble shooting; swap shop

3rd March: Dave Miller: Introduction to Rocrail - the view from the top;

- Introduction
- Rocrail basics
- Locos: throttle and programming
- Layout: design, signalling and automation Case study: North Walsham
- Q&A

Howard Watkins: Demonstration of JMRI running on a Raspberry Pi 2; plus show and tell; trouble shooting; swap shop

7th April: Mark Riddoch: Practical & Cheap Wireless Connectivity - A look at a widely available and easy to use WiFi device that can be integrated into control and feedback systems. A general look at the ESP 8266 wireless device and a couple of projects that make use of it. The format will be a short talk about what the devices can do and how to use them plus at least one demo of a wireless CBUS interface and hopefully an on board application of WiFi as well; Simon Roberts: wants to kick some ideas around/get some advice for use of MERG kit and other electronic controls for a small urban layout as part of the EM Gauge Challenge; Ian Bishop & Mark: We'll also be testing the use of Kit 53 accessory decoder to drive servos connected to the Servo4 module; Show and tell; trouble shooting; swap shop

5th May: Mark Riddoch: Practical & Cheap Wireless Connectivity - Update on last months presentation - fixing some bugs and improved performance data; Mark will also helping me test the use of Kit 53 accessory decoder to drive servos connected to the Servo4 module; show and tell; trouble shooting; swap shop

2nd June: Mark Riddoch: High level explanation covering the control systems and automation works at Pendon; Advice on a shuttle: Michael Williams want some help working out the best way to implement a loco running between all four ends of the track shown below (Not sure whether he is running DCC or DC?); Make the bells ring: Chris Barker has a town on his layout with a church - and he wants some type of sound device to play organ music or may be church bells - controlled by CBUS or DCC; show and tell; trouble shooting; swap shop

7th July: Ian Bishop - CBUS demonstration to get a member's CBUS system working; Ian Morgan - Demonstration of a demo board being used to help explain to the Basingstoke club how he intends to wire up their new 2mm finescale layout - CANACE3, CANLED, CANACC8 and relay board and CANSERVO8C and a couple of servos; Chris Barker - Demonstration of his Adafruit audio player playing church bells; show and tell; trouble shooting Simon Robert's CANACC8 and CANACE8 boards - turns out the PICs don't have any firmware; swap shop

4th August: Dave Miller: Discussion covering requirements for wiring for a G-scale garden railway; David Hills: Discussion on his Arduino decoder prototype - size v capability... plus a few 3D prints to look at; show and tell; trouble shooting; swap shop

1st September: Pauk Miller: wants some help understanding DCC commands to control DC trains (using PWM controllers - the ones designed by TVAG; Ian Morgan is bringing along his CBUS demo

board (shown last meeting) but with addition of a turnout controlled by servo using my 3D printed under-baseboard tie-bar that he is experimenting with; Henry is interested in learning more about laser cut servo mounts for his O14 layout; show and tell; trouble shooting; swap shop

6th October: Ian Morgan - PTP Lite layout control system; Howard Watkins - JMRI on a Raspberry Pi & using the 7" touch screen display; Dave Harris - Andover show report; Dave Harris - Update on servo - frog polarity PCB control board; Ian Bishop / all - Review of past presentations/courses/workshops to see what we should re-run; show and tell; trouble shooting; swap shop

3rd November: Mark Riddoch - Presentation and demonstration of a single CBus driving a pair of DC tracks and a DCC track from the MERG handset or via JMRI; Dave Hills - conceptual 3D drawings for a G-Scale turntable; Ian Bishop: troubleshooting JMRI control of CANACC5

1st December: David Ingoldby - Homemade DCC throttle ; show and tell; trouble shooting; swap shop

## 2014 Meetings

7th January: Ian Bishop: Progress on Imberhorne exhibition layout: CBUS, DCC TOTI and CAN\_RFID; David Hills: 3D Printing demonstration

4th February: Ian Bishop: Progress on the control panel for Loddon Valley fiddle yard; CBUS, JMRI Panel Editor and JMRI web server demonstration

25th February: Ian Bishop: 1 - [Presentation](#) & workshop: "CBUS: From kits to working points". Introduces CBUS, kits, basic wiring and how to use the FLIMconfig software Download

4th March: Ian Bishop: 2 - [Presentation](#) & workshop: "JMRI: From working points to Control Panel". Hands on workshop where delegates create their own control panel in JMRI to control a couple of points controlled by CBUS. Download

1st April: Ian Bishop: 3 - [Presentation](#) % workshop: Introduction to JMRI scripting: the python file used for automating the Imberhorne Layout; Download; David Hills: update on the crane animation; Simon Hills: 3D printing design; Dave Harris: Timetable display program

6th May: Iain Waddell: Workshop showing how to use CAD to layout circuits on Veroboard including the use of Eagle CAD and VeeCAD. Update on the working fiddle yard (DC control) that uses CBUS, thumbnail switches and relays to select routes and isolate sidings

3rd June: Ian Morgan: Introduction to 3D Modelling for 3D Printing Download; Demonstration of servos powered by an Arduino and DCC

1st July: Workshop 1 - Mark Riddoch: Arduino servo workshop; Dave Harris: Demonstration of the DCC TOTI

5th August: Howard Watkins: The CANCOND8C on Pentre Road; Doug Wardell: Example of Arduino using CBUS to communicate with the CANCAB and CANACE3; Show and tell

2nd September: SWAP Meet; Progress on crane automation mechanics/3D printing; FlimConfig training; troubleshooting

7th October: Workshop 2 - Mark Riddoch: construction of optical interface board to link Arduino and DCC system

4th November: Imberhorne: automation of excavator using CANSERVO8; Dave Harris - Servo Frog Juicer; Show and tell, trouble shooting, swap shop

2nd December: Workshop 3 - Mark Riddoch: using the Arduino library and interface board to build a DCC decoder

## 2013 Meetings

8th January: Barrie Charlton: The Dos and Don'ts of Data Transmission

5th February: David Ingoldby: Making a PCB for the Pocket Money Project #3: Servo Controller

5th March - Building the Pocket Money Project #3 Servo Controller

2nd April -

1. Ian Bishop: [Presentation](#) & workshop: From kits to working points (Introduction to CBUS)
2. Malcolm Slawson: Traction control system on an HST power car

7th May - Ian Morgan: Decisions, Decisions - How Freshwater evolved

4th June - Ian Waddell: NPN transistors with practical exercises

2nd July - Richard Standing: Expanding functions of the Auto Shuttle pocket money project - with practical session

6th August - Dave Harris: Railway Operations for the railway modeler

If there is time Ian Bishop will bring in the working prototype of a new control panel for a fiddle yard that allows the user to dial in a start point and end point which then selects one of the 32 routes through the fiddle yard and sets the slips and points accordingly. It uses BCD thumbnail switches feeding into a CANACC8C to generate an unique event from whatever combination is dialled into the switches.

10 August - Joint East Midland/Thames Valley Area Group meeting: John Gowers G Scale garden layout, Bicester

3rd September - Dave Harris: Introduction to FETs (Field Effect Transistors)

2nd October - Howard Watkins: Baseboard Wiring and Documentation

5th November - Ian Bishop: Imberhorne layout - discussing new features

3rd December - RFID technology to RaspberryPI (slide show) or to CBUS & JMRI (block detection)

## 2012 Meetings

10th January - Workshop 1 - Build a PIC circuit: Dave Harris; Servo4 demonstration

7th February - Workshop 2 - PIC architecture: Dave Harris



6th March - Workshop 3 - Anatomy of a PIC source code in C language: Dave Harris

3rd April - Microchip IDE

1st May - Ian Bishop: [Presentation](#) & Workshop: JMRI: From 0 to a control panel with turnouts & routes

12th June - Howard Watkins - JMRI presentation - Decodor Pro and decoders

23rd June - 1 Day Workshop - Venue The Reading Society of Model Engineers. Introduction to CBUS - Pete Brownlow; FLIM - Howard Watkins

3rd July - not recorded

7th August -1) Basics of testing - Paul Martin; 2) Why Paul went DC rather than DCC - Paul Martin; 3) DCC tinkering session – bring stuff to play with

4th September - session on surface mount soldering -building the new Gas Lamp twinkle SMD kit (Kit 461): Pete Roberts

2nd October - Level crossings control using CBUS logic: Dave Harris; New RFID interface based on a modified CANACE8C that shows progress of a train through blocks in JMRI: Mark Riddoch; Basic introduction to Automatic Warning Systems, Automatic Train Protection and Train Protection Warning Systems that the 12inch to the foot scale use to assist the train driver: Malcom Slawson

6th November - Workshop - CBUS: From kits to working points: Ian Bishop; MERG kit needed to switch a layout from DC to DCC and back again: Howard Watkins

4th December - The Ins and Outs (puts of circuit boards): Dave Harris; Presentation of new MPD mimic panel: Ian Bishop

## 2011 Meetings

6th December - Inaugural Meeting TVAG - Poll of attendees to research topics of interest. 1st: PIC programing, 2nd JMRI, 3rd CBUS

## Links

Loddon Valley Model Railway Club [www.lvmrc.co.uk](http://www.lvmrc.co.uk)

From:  
[https://www.merg.org.uk/merg\\_wiki/](https://www.merg.org.uk/merg_wiki/) - Knowledgebase

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