MERG Warwickshire / North Oxfordshire Area Group

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This area group was formed in Jan 2016 to serve Warwickshire / North Oxfordshire and surrounding districts although we attract members who travel from further afield to join us for our meetings.

The area group meet about six times each year for a full day at the club rooms of the Leamington and Warwick Model Railway Society www.lwmrs.co.uk.
Details of meeting dates and agenda are published in the Area Groups Section of the MERG Forum: https://www.merg.org.uk/forum/viewforum.php?f=177

Mike Plowman (M5311) is the convenor for this group who may be contacted through wno@merg.org.uk

The group comprises skills from beginner to time served electronics engineers but all with an interest in applying electronics to model railways.

The objective of the group is to ensure that the interests of the members are served by making use of the skills and knowledge inherent in the group, drawing on skills of the subject experts and to expand our skills and knowledge through active, open participation.

The group is growing strongly with many members volunteering to present or run workshops where there is the opportunity to learn new skills in practical hands-on sessions.

MERG Home page

Email

For non members, to send us an email, use the MERG Area Group contact form

MERG members may contact Mike Plowman direct via his Profile page.
This Group's Sub Forum is here.

2016 Meetings

Jan 31st Inaugural Meeting
Twenty eight MERG members met in the Leamington and Warwick MRS clubroom for the inaugural meeting of the Warwickshire / North Oxfordshire Area Group. Although initially aimed at members living within 30 miles of the clubroom, members travelled from further afield.
Paul King - MERG President, entertained with a history of MERG.
Pete Brownlow, in his usual relaxed manner, briefed the group about CBUS and future developments.
Chris Boxall, a Severn Valley signalman, led a very interesting and interactive session which only skimmed the material that Chris has available.

The day closed with **Mike Plowman** describing the CBUS implementation proposed for the new LWMRS n gauge layout – Kineton.

April 23rd
Thirty five members and guests from the host club attended the meeting held at the L&WMRS Club Rooms
The morning was dedicated to the **MERG DCC solution** with a presentation by **John Gowers** who then demonstrated and provided **hands-on** experience for the attendees.
Tony Chamberlain, another of our Severn Valley signalman, described how a model railway, in their training centre, is used to train signalmen. By simulating various events, such as “a brown cow on the line”, a signalman’s knowledge of the various rules can be tested in a safe environment. For the first time, the afternoon was set aside for a soldering and testing **workshop** which proved very successful.

July 9th
Another strong attendance were treated to a presentation by **Don Upton**, assisted by **Bob Mercer**, who presented **“CBUS Live”** adding CBUS modules to a small layout to drive various accessories. The features of each module were described before being physically attached to the baseboard. Once all the modules were installed, Don proceeded to explain the facilities of **FCU/FLiM** and finished by configuring each of the modules into the network. Throughout, this was a highly interactive session with questions flying in from the surrounding audience. The room was reconfigured in the afternoon to allow informal workshops to take place: the library was buzzing with groups either discussing, questioning, watching demonstrations, building and testing kits.

Sept 24th
The group met again at the **Leamington and Warwick MRS** club rooms.
The members were greeted with the now customary **LWMRS bacon roll** breakfast.
Proceedings started with **Judi Rastall** who had made the long journey to tell the members about the operation of the **Kit Locker**, a presentation that was well received and generated a large number of questions.
Mike Plowman followed with a presentation on the **Layout Control Dilemma** showing how the selection of CBUS did not require the adoption of DCC.
Finally, **Bob Mercer** gave the first of series of presentations about the use of JMRI. The live demonstration had a very positive effect on a number of members and we are looking forward to the next part of Bob's series.
After afternoon tea and cakes, the informal part of the meeting allowed members to exchange ideas and get questions answered.

November 12th
Over 30 members congregated at the **Leamington and Warwick MRS** Club Rooms for this fifth meeting of 2016. As this was the end of our first calendar year for the WNO area group, each member reintroduced themselves to the group, restating their interests, the progress they had made in the past year and what items they would like to see included in the agenda for the coming year.
Members were also asked to contribute ideas for the **Area Group's celebration of MERG's 50 years** in 2017.
John Russell showed how to interpret circuit diagrams and work out what voltages to expect at various points in a circuit which was really useful when testing and fault finding modules.
Chris Boxall gave a very comprehensive presentation on the block signalling process on the Severn Valley Railway. This included a demonstration with three members “bell coding” each other so that a train with a token could pass from one section to another.
Due to time constraints, **Bob Mercer's** JMRI presentation was deferred to the next meeting.
For next year, it is clear that the presentation part of the meeting will need to be carefully planned so that enough time is allocated to the growing need for more **practical sessions**.

2017 Meetings

January 28th 2017

Over thirty MERG members met in the **Leamington and Warwick MRS** clubroom for the first 2017 meeting of the Warwickshire / North Oxfordshire MERG Area Group.
They were welcomed with the customary, signature bacon rolls with tea or coffee prepared by the Leamington and Warwick MRS Exhibition Manager and MERG member Mike Collins. This has become quite a feature of our meetings with members arriving early to chat whilst eating their bacon rolls.
Mike Plowman introduced the meeting and thanked all the members who had contributed to the success of the group in its first year.
He continued by outlining the next meeting which will be held on the first Saturday of the **LWMRS Show on March 4th/5th.**
The show will feature the group's MERG@50 Celebration including a **Meet the Committee Meeting** and the cutting of the Anniversary Cake.
Following feedback from members, Mike proposed that the format for all meetings will now be two presentations in the morning with more structured, focused discussion areas in the afternoon.
David Thomas opened with an **RFID** presentation, a subject which had not previously been addressed in the group. David talked about the principles, the MERG offering and the availability of components from “unconventional” sources, one of which was the internals of a key fob. The sensing coils can be easily removed and can be accommodated inside an n-gauge wagon.
He went on to demonstrate, on his test track, the sensors working and, by linking to JMRI, the position of trains on the layout diagram along with their description could be displayed. But his “pièce de résistance” was the ability to use the output to drive a visual basic file providing automated announcements of the train’s arrival.
This set the room buzzing during the tea break – with many of the audience enthused to discover more.
Meeting in the Leamington and Warwick Railway Club has the added advantage for the MERG members of being able to access the enormous resources of the club library.
Our resident enthusiast, **Bob Mercer** continued his **“Introduction to JMRI”** with part 2 of his talk not only talking about the function and facilities but demonstrating, on a very compact test track, automation of shunting operations using Hector position detectors, with magnet operated de-couplers. Bob is using rare earth magnets attached to a servo arm to activate the DG couplers. Again, in his usual inimitable fashion, Bob’s presentation stimulated an enormous amount of interest with members discussing, over lunch, how they could implement JMRI, even if only on a small piece of their home layouts.

During lunch, the room was reconfigured to define focus areas for the afternoon. David and Bob were able to answer more detailed question about their morning presentations Whilst **Brian Flanery and Simon West** ran a clinic helping members to fault find their CBUS kits.
The new meeting format proved to be to the members liking and we will continue in this manner along with our informality, friendliness and openness which is a feature of the WNO Area Group.

MARCH MEETING - MARCH 4th 2017 - MERG@50 CELEBRATION

The March Area Group meeting was held on the first day of the Leamington and Warwick Exhibition on **March 4th 2017**. Again over thirty members attended the meeting and were treated to two informative presentations.

Martin Perry, MERG Technical Support Manager and Vice Chairman gave an excellent presentation on the subject of the **The MERG Kit from Design to Availability**. This stimulated many questions both from the members and Martin. It quickly became apparent that few members understood Martin’s role as the Technical Support Manager and how he could assist in the solution of issues with

kit build and test.

A 3D printing machine was quietly producing parts at the side of the meeting room whilst **Howard Watkins** presented an **Introduction to 3D Printing**. Howard explained how parts could be designed using free software and using even more free software, the part could be checked and an STL file produced to drive the printer. He explained several techniques that were required to produce large parts and how the features of the various models of printers alleviated some of the problems.

Discussions continued over a buffet lunch and it was clear that many members had been impressed and inspired by both the presentations.

Meet the Committee, At the Warley show last year, several Committee members agreed to participate in a **"Meet the Committee"** event. After many comments on the Forum regarding the location of the AGM, the objective of this event was to provide the members the opportunity to engage directly with the Committee.
Members within a seventy mile radius of the show had been personally invited to attend and given the option to join the WNO Area Group members for their meeting in the morning. The Committee representatives were Paul King (President), Bob Vetterlein (Chairman), Martin Perry (Vice Chairman and TSM), John Ferguson (Publicity), Nigel Phillips (Exhibitions) and Roger Edwards (Journal Production).
After a slow start, there was a wide ranging discussion of number of technical, documentation and organisational subjects. From feedback I have received, both the members and the Committee found the discussion valuable.
MERG@50,
The final act of the WNO Area Group Meeting was the cutting of the Anniversary cake. It seemed such a shame to cut the MERG Logo'd cake but Bob Vetterlein, accompanied by the other Committee members, wielded the cake slice with aplomb and the cake was enjoyed by all.





MAY MEETING - MAY 6th 2017

Several new members joined the thirty members at the **Leamington and Warwick MRS** clubroom for the third 2017 meeting of the Warwickshire / North Oxfordshire MERG Area Group.
They were welcomed with the customary, signature bacon rolls with tea or coffee prepared by the Leamington and Warwick MRS and MERG member **Mark Reader**. This has proved to be a useful time for members to chat before the start of the meeting and members arrive early to chat.

Mike Plowman kicked off the proceedings suggesting a further change to the proceedings.

Simon West gave a very interesting presentation on the subject of Printed Circuit Board (PCB) design and manufacture showing examples that he had created using various techniques from hand layup and photo-etching to design and manufacture using the latest CAD applications. His presentation encouraged many questions and many members came away with a clearer understanding of the design and manufacturing process.

David K Roberts explained the principles of wiring the layout including wire size selection, routing and termination. He explained current carrying capacity and voltage drop considerations. This subject is quite often an afterthought but David's presentation emphasised the importance of a proper plan, colour coding and documentation.

There followed two presentations by the Chairmen of model railway clubs within the WNO area.
Tony Moss represented Coventry MRC http://www.coventrymodelrailwayclub.org.uk/ and
Alwyn Annels represented the newly reformed Stratford and District MRS http://www.sdmrc.co.uk/

In addition to the workshops and demonstrations in the afternoon, two subjects that will be presented at the next meeting were previewed.
Tony Chamberlain previewed the sound generator which has generated an enormous amount of interest since it was written up by Davy Dick and featured in the Journal.
Bob Mercer previewed his work with Raspbery Pi and its application to model railways.
It is hoped that these previews will become a feature of future meetings.

JULY MEETING - JULY 1st 2017

Almost 30 members met at the LWMRS Clubrooms for the July meeting.

After the introduction and plea for new presenters for the next meetings by Mike Plowman, **Jeremy Mole** explained how he installed DCC sound in a small n-gauge shunter. He showed, in detail, the modifications he made to the inside of the body and the chassis in order to accommodate the decoder

and speaker. Jeremy then demonstrated the completed loco on a rolling road. The presentation is filed in the area group database.

Bob Mercer continued his series of JMRI presentations, this time covering the intricacies logix and signals. These introductory sessions by Bob have proved very popular with many more members now having an understanding of the capabilities of JMRI.

Tony Chamberlain showed the investigations he had conducted with regard to RFID sensors, their shape, effective detectable height and sensitivity with regard to loco speed. This session proved to be highly interactive and showed how this subject is becoming of more interest in the group with several members wants to share the data and participate in the investigations.

The workshops and informal discussions continue to be a popular part of the meetings with groups of members discussing configurations, sorting problems and acquiring new skills.

SEPTEMBER MEETING - September 16th 2017

Thirty members again met at the LWMRS Clubrooms for the September meeting.
After the introduction by **Mike Plowman**, he thanked the members who have come forward to present and also those who are willing to participate in the “show and tell” sessions.

David Thomas explained explained the basic capabilities of the Arduino and showed how it could be used to accomplish several railway projects. This stimulated much discussion amongst the members and David used the demonstrators that he had prepared in the afternoon workshops where more discussion continued.

David Radcliffe gave the first of the show and tell presentations telling how he had participated in a “real railway” project for a television company building a railway from coast to coast in the north of England. The many challenges encountered along the route were described along with many entertaining tales. We have to wait for the TV programme to find out whether the team were successful – Dave is sworn to secrecy.

Tony Chamberlain continued his presentations from the previous meeting covering his investigations into the use of stepper motors for turntables and the “sound project” which was an extension of that featured in the MERG Journal.

With both David and Tony's presentations promoting the use of Arduino, it was agreed that an **“Introduction to Arduino”** workshop would be provided for those members who wish to pursue projects with this technology.

The workshops and informal discussions continue to be a popular part of the meetings with groups of members discussing configurations, sorting problems and acquiring new skills.

NOVEMBER 11th 2017.

On November 11th 2017, seven new members were included in the thirty two members who attended.

David K Roberts gave a very informative presentation about power supplies. He explained, and showed, the various types available and the principles of regulation. There was much interaction with the audience especially concerning component selection.

As the meeting was held on **Armistice Day**, the group marked the moment with a one minute’s

silence at the eleventh hour.

David Thomas showed how he had investigated the provision of “stay alive” to various DCC decoders. This is a particularly challenging in smaller scales due to the size of the capacitors required to overcome small “dead areas” on the track. This is becoming even more important with the increasing use of sound in locos. David showed the various experiments that he had conducted to increase his knowledge of this important area of application. There was much discussion around the demonstrator during the afternoon.

The workshops and informal discussions, held in the afternoons, continue to be a popular part of the meetings with groups of members discussing configurations, sorting problems and acquiring new skills.

John Gower’s soldering workshops always attract an enthusiastic group learning or improving their skills under John’s guidance. One new member commented that he was now confident to start buying kits to build.

Bob Mercer showed the advances he has made with an Arduino sensing the presence of cassettes in the fiddle yards of the LWMRS Kineton layout using LDR’s. He then communicates the results via CBUS to the fiddle yard at the other end of the layout.

I also have offers of presentations from Kelly Harding (PiSprog) and Roger Edwards (ATBus) which will be included in the programme for next year.

2018 Meetings

JANUARY 27th 2018

On the second anniversary of the formation of the **Warwickshire, North Oxfordshire MERG Area Group**, 40 members came along to **Leamington and Warwick MRS** club rooms for the first meeting of 2018. Typically, about 30 members attend the group meetings but this time, the capacity of 40 was reached giving the catering team of **Mike Collins** and **Mark Reader** a challenge first thing to provide bacon rolls for the arriving members.

The meeting featured **Ian Hogg** describing and demonstrating the multi I/O facilities of the **CANMIO**. His outstanding presentation covered all aspects of configuring the CANMIO to take advantage of multiple input, output and consuming it's own events. This was a highly interactive session with Ian taking questions from members throughout the presentation. After “elevenses”, Ian showed his demonstration of a barrier level crossing and this made many aspects of configuring the CANMIO much clearer especially with regard to sequencing events.

Paul Townsend, the Bristol AG leader, followed with a presentation of his developing P4 Board Gauge / Standard Gauge layout which will use the multi I/O facilities of CANMIO. Paul is working with Jim Greg from the Northern Ireland on a configuration guide for CANMIO.

In the afternoon, there were a range of workshops covering:

- Soldering - John Gowers
- JMRI - Bob Mercer
- CBUS - Simon West
- FCU configuration - Mike Plowman

- general discussions throughout the club rooms covering many and varied subjects.

JUNE 2nd 2018

Another strong turnout of thirty members met at the Leamington and Warwick MRS Clubrooms and were treated to a detailed presentation by **SIMON WEST** , the Area Group's lead on CANMIO. He described how the Leamington and Warwick Model Railway Club's exhibition 'OO' Duxbury layout control system has been revitalised with the key aims of simplifying the operation of the layout and make it reliable ready for it appearance at Warley in November 2018. This involved a complete rewire providing for continued analogue D.C. operation but now based on common return wiring which immediately nearly halved the number of wires requiring connectors. DCC operation has been allowed for as an option with the possibility to switch out the analogue controllers and connecting to DCC 'districts' instead.

CBUS has also been used to further greatly reduce the number of wires and connectors needing to come back to the main control panel for operation of turnouts and the relays that are used for joining track sections together to form routes for a particular analogue controller.

Emphasis was placed on reliability and how to cope if the electronics fail for some reason. Careful design ensures the normally closed contacts of the relays are used so that the two continuous runs are available via a storage yard road for each, as is the branch line and the goods and loco yards so trains can still run without the electronics working, just no fancy moves across junctions but ensures the public would see trains moving at an exhibition.

The 20+ CBUS modules around the layout are all CANMIO boards running various firmware depending on function with the aim to gradually update and standardise these to the universal CANMIO firmware of which there is one already in operation providing more than 8 outputs and a few inputs to be achieved with one CANMIO board.

To simplify the operation and make the control panel as intuitive as possible JMRI PanelPro software is used to provide route setting capabilities and interlocking logic between the push buttons and indicators (which were also connected to the layout CBUS) on the panel and the turnouts, relays and signals on the layout. The talk was followed with a viewing and demonstration of the layout control system and questions and answers.

The slides providing more details and examples are available on the Warwickshire and North Oxfordshire Area Group part of the MERG wiki at:
https://www.merg.org.uk/merg_wiki/doku.php?id=helpsystem:presentations#merg_warwickshire_and_north_oxfordshire_area_group_wno

In the afternoon, Simon moved on to show members the Duxbury layout operating and answered their detailed questions.

JOHN GOWERS was much in demand for soldering advice and techniques advice especially using SMT components in the CANCAB. Under John's guidance, several of the group tried their hand at SMT component soldering commenting that using the correct techniques, good light, the correct solder and a good soldering iron there was little to be feared about kit construction with SMT components.

JULY 21st 2018

After our signature bacon rolls, prepared by **Mike Collins** and **Mark Reader**, the thirty seven members who came along to the Leamington and Warwick MRS Clubrooms settled for our meeting featuring a review of two members' projects. All the projects made use of Arduino technology and an

interface to CBUS. This technolgy can often be used to provide cost effective solutions to particular problems.

David Thomas showed three projects

1. DCC Suttle
2. CBUS Sound System
3. Multi Cab Controller.

The **DCC Shuttle** is, as the title suggests, for DCC only. It uses an Arduino Uno, a widely available CBUS interface and a “sketch” from one of the libraries listed on the Wiki modified to suit this application. Start and finish are set using CBUS events. It has variable stop and wait times which are set by changing NV's using generic mode of FCU. It can also generate events for sound and signals. The **CBUS Sound System** uses the “sound card” with an Arduino Nano and MPEG3 player on board.The CBUS interface is connected to the outputs of the Nano and set up using FCU Generic mode. Cbus events (for instance from sensors) can then generate sounds. The **Multi Cab Controller** was developed to suit a samll demonstration layout at the David's to provide a combination of point switching and simplified CABS. It is based on Arduino Mega and can control 4 Locos – Speed – Direction; set Loco addresses via NVs. It has limited Function Commands for simplicity, full Emergency Stop response and incorporates small turnout control panel.

There were two parts to the presentation by **Jeremy Mole**. Jeremy has used an Arduino to provide a means of communicating between the cassette yard operators at either ends of the LWMRS N-gauge exhibition layout Kineton. It uses CBUS as the communication method to transmit predefined messages about the type of train being sent from end to end. Jeremy is working with **Bob Mercer** who is also a member of the Kineton team to automated messaging regarding the presence of a cassette, it's state (empty or full) and an automated stop.

In the second part of his presentation, Jeremy, who has twenty years experience of working with CANBUS and other bus systems in the automotive industry gave an insight into the amazing breadth of its application in modern vehicles.

The afternoon workshops covered hands on sessions of soldering and configuring CBUS using FCU. Many members carried on discussions from our previous meeting around Duxbury - the 00 Gauge exhibition layout which utilises CBUS.

2019 Meetings

Jan 26th Meeting

JANUARY 26th 2019

On the third anniversary of the formation of the WNO Group, forty members attended the meeting at the Leamington and Warwick MRS.

PETER BROWNLOW **presented “An Update on CBUS” and it was fitting on this anniversary as Peter had given the opening presentation at the inaugural meeting.**



For the benefit of some newer members, Peter gave a short overview of principles of CBUS. However, the core of the presentation covered everything from the Classic CBUS modules through Second Generation to a more detailed description of the CANMIO series and all its derivatives including the daughter boards. Pete used the Kit Locker to show the modules and the power of the “i” (information) and “TB” (Technical Bulletin) buttons on each of the kits to gather more information. He also showed how to find what has been developed by using the software wiki - here is where CBUS modules and daughter board that are not available as kits may be found. This stimulated a highly interactive session with many questions. This presentation was well received by the members with many saying that their plans for a CBUS implementation had been reinvigorated.



In the afternoon, three of the LWMRS club's exhibition layouts were running: Duxbury 00 gauge finescale DC / CBUS; Kimble 0 gauge DCC / CBUS and Kineton n gauge finescale DCC / CBUS enabling members to see practical implementations of MERG technology. In addition John Gowers' soldering workshop was busy demonstrating and answering questions.

Having started at 9:30 with bacon rolls and the consumption of many cakes throughout the day, the meeting finally closed at 17:00.

MARCH 30th 2019 Almost forty members came along to the second meeting of year at the Leamington and Warwick MRS club rooms. Our signature bacon rolls were prepared on arrival as usual by MERG and LWMRS members Mike Collins and Mark Reader.



This allows members to have an informal get -together before we settle down for the morning's proceedings.

Mike Plowman welcomed the members and introduced the theme for the 2019 – **"CBUS from Soup to Nuts"**. This is a year long programme to increase the understanding of the many aspects of CBUS from basic concepts through to planning, selecting, building and configuring modules through to building controls panels and putting detection to work on the layout. The outline agendas for the next four meetings was shown and received enthusiastic approval from the members.

This meeting concentrated on a recap of the CBUS. Mike described the basic principles of the CBUS system – the need for the twisted pair, continuity of the bus and the termination resistors. He showed the concept of the producer / consumer model and how events can produce actions on specific modules attached to the CBUS. The benefits of the four-wire bus were explained and set the scene for **Jeremy Mole** to explain the differences between a CAN implementation in the automotive sector and the CBUS implementation of CAN.

Jeremy, with his twenty years' experience of CAN, was able to show the structure of the "messages" and the way they are prioritised on the bus. He estimated that on a typical CAN bus, where messages from sensors and actuators are passing every few microseconds in both directions, that the bus is about 80% utilised compared to a CBUS which is probably about 2% where messages pass every few seconds.

After a coffee and cakes break, **Simon West**, the WNO Group lead for CANMIO reinforced the producer / consumer model with an explanation of where each of the CBUS modules actually fit. Both the original CBUS modules, the second generation and those shown on the software WIKI which provide additional or different function were covered. Many questions were posed and answered allowing many members to get a clearer picture of where they should start.

Many members were able to avail themselves of the extensive kit locker which is now being managed by **John Gowers** on behalf of the WNO and East Midlands Groups.

In the afternoon, members were able to mingle informally to ask specific questions of the specialists and to have techniques demonstrated.

The next meeting is scheduled for May 11th 2019.

Further 2019 meetings will be held on the following dates

- July 20th
- September 21st
- November 16th

More details are available on the Warwickshire, North Oxfordshire Area Group's Page of the Forum.

Exhibitions

Leamington & Warwick Model Railway Society Show
Saturday 6th March and Sunday 7th March 2020

Leamington Spa College, Warwick New Road, Leamington Spa, CV32 5JE.
Opening Times – Saturday 10am – 5pm – Sunday 10am – 4pm.
Latest News at – www.lwmrs.co.uk

Contact Exhibition Manager
Email – exhibition@lwmrs.co.uk

From:
https://www.merg.org.uk/merg_wiki/ - **Knowledgebase**

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