

**Minutes of the
NMRA DCC Working Group Meeting
Date: Thursday, July 26, 2007
Location: Greco Room, Convention, Detroit**



Minutes recorded by Mary Kay Voss

Welcome:

8:00AM. Didrik Voss opened the meeting.

In Attendance:

Jack Treves, Brian Barn, Gil Fuchs, John Socha-Leialoha, Stan Ames, Dick Bronson, Richard Matthews, Jurgen Lindner, Karl Koel, Peter Ely, Bob Jacobsen, Reinhard Mueller, Peter Ziegler, Lee Riley, B Lenz, Bill Ataras, Chris Wolf.

Old Business

Topic 0-309302 – RP-9.3.2 Revision

Peter Ziegler:

He is passionate about communication between companies in Europe. There are many ideas, but not enough data to make complete proposal. #9302 must be expanded in some way, but will need to speak more about it in York in Sept. As to what the technical proposals are, he can estimate what some companies are planning. Mr. Thos plans on bringing a booster, next year. Mr. Koen will have add-on, for those with ??? decoders. We have some decoders equipped with bi-directional within 2 years, and in operation with 2 types of decoders now HO, and will have few weeks or months, with other large scale and access decoders, at same time, make cutouts in command station .. Lenz will address his LSE – detector which receives address and displays it. Directional – two companies are working together.

Topic 0603244 – Location Dependent Information

Peter Ziegler:

Location Dependent Info – nothing new; he made proposal last year.

Lenz – you want to make higher sophistication and new stamp in-- in location detector, signal that can be integrated as to speed limit or location code.

Ziegler – no progress on new scheme.

Topic 0603245 – DCC Testing Platform

Didrik Voss:

Testing Platform from PRICOM –Bob Scheffler had to get real job. His testers may not be made anymore. Problem – development of new platform has been stopped. Email from Mattias Vermeulen, Train Technology has volunteered to continue the development. Power point has been given by PRICOM, but that’s about it. No test boards. Some notes. Not too formal. Sense is that he will be willing to work with whoever picks it up.

Voss will accept Mattias Vermuelen’s proposal and see how he can do. We are two years behind.

Topic 0603243 – Software for DCC Testing Platform

Stan Ames said he would develop software to run on that platform, but that is on hold because of that.

Ames– we have an excellent test tool. Software is excellent for what it does – has been controversial from day one because some people want flow charting. His business quit doing that years ago. If someone really wants flow charting then they can help. He won't do anything without a definition of what is 'right', because we'll bring it back and it will still be wrong.

Step One – is documentation of what is needed. What we have now is excellent, but community is not using it. Half products fail.

Voss will talk to AJ Ireland about helping with test documentation.

Topic 0504023 – 21-Pin_Connector

Jürgen Lindner:

In implementation of 21 pin connector by Bernd Lenz, there are problems in our definitions.

Lenz-- I hear it. I don't know.

Lindner – I don't know of problems.

Lenz – I heard something about changing wiring, or something.

Mueller – if there are any problems, then the people standing behind the proposals should be notified. We can help solve.

Ames – There is difference in max dimensions and implementation.. Re: dimension 10 – should be 2.6 ml, Has this been changed?

Lenz – I can call and ask.

Linder – re: 21 - only good news. Most mfg are shipping decoders with 21 pin...and announcing interface. Most have decoders for the interface. Not aware of mechanical problems – would be easy to solve.

Ames –There is more problem in the documentation, rather than implementation.

Linder – Can easily solve if aware. On locomotive side, Lima and Electrotrain – (company in Belgium) manufacturer is using 21 in the future. It is already a standard.

Lenz – Situation of manufacturer who wants to build 21 pin in. If one comes with 16 pin connector, we need to make decoder for that. Is this a standard? Lots of people who don't like it are waiting for a new one i.e. Fleischmann. I don't know which one will be produced, but am sure that we would make a nicer one if have same documentation about pin connect and engine in market with same connector. It is not decision from decoder manufacturer but from engine manufacturer.

Linder – that is true, when we introduce definition, , it was clear that lots of manufacturers would use interface. Instead of saying manufacturing standard, we decided to go other way so every decoder manufacturer would have opportunity to implement. Lots of locomotives in markets feature this interface, we offer decoders for it.

Topic 0603242 – 22 Pin Connector

AJ Ireland is topic leader but did not attend meeting for this discussion.

Voss – now having a 22 pin connector.

Linder – have not seen it yet...if there is a market for it, of course.

Mueller... - would have liked AJ to present. Problem in Europe, several locomotive manufacturers are not happy with the definition of 21 pin connectors. They would like to use a different configuration. Some manufacturers say we need connector they can scale down, not always use full block but only 16 or 8 pins of it. Mueller had spreadsheet. Showed sample layout. We don't want to produce (male) missing pin. Both have same real kind of pins, therefore not call 22 pin connector. I think we should call it P LuX to prevent any kind of confusion between 21 or 22, or whatever.

Ziegler – is PX, or P LuX.

Mueller – they have produced these. Locomotive manufacturers can produce some to try out these decoders. Have problem of both sides producing something that other side has not manufactured the matching.

Ames – personally I think it is a fabulous design. Practically, their _____ group has only weeks, months to have opinion on this. If not changed quickly, it will become what it is, whether NMRA wants to endorse or not. If we want to influence, this is the time to say something.

Mueller – if you want to say something – do it soon.

Fuchs—How complicated is it to interface hardware? Would that solve problem?

Mueller – with transition between 21 and 22 – manufacturers are putting both in their loco board. Some will put a combination – depending on space in engine. You can scale down with smaller scales. Many want both, but may not have space.. No room for inductors. All depends on space you have and what manufacturer thinks is best. 21 pin is in market since 2004. Other will come in because Fleishmann and _____ will go for it. I believe we must put both into our RP-91.1. Both needs to be in same place documented, then all manufacturers can look up and see definition of the two connectors and what they want to do to put in RP9-1.

Gil Fuchs – what I was _____ is harness on decoder board and cable to 8pin. If both 21 and 22 pins can use cable to change.

Mueller – cable adds significantly to cost and size. Especially with smaller scales, people will not want additional wire just to connect decoders. In N – there is no room for wires.

Voss – what we are looking for, when we get home. Look at working group site. Comment period, vote. Let's adopt and get the 21 pin and P LuX in the RPs.

Mueller - do we want to take votes before or at meeting in York?

Voss – my sense is we need to take vote before the York meeting. Next step is to get BOD to adopt RP, and that won't happen until January. So if we settle amongst ourselves, then that should not be a problem. Let's get to a vote rather quickly.

Topic 0603241 – New Packet Format

Peter Ziegler. We discussed this year and at last meeting in meantime, we had consideration but no fixed proposal. Also I would like to speak more about at next meeting in York; Basic idea – protocol based on needs of _____ or microcontrollers at this time. I would need more Fully sufficient for small layouts. If large, can be a problem because needs full information from system to local, need lots of packets, because of transfer of function is rather inefficient. Not included thing for transfer larger amount of data. .One proposal, streaming mode.

Fuchs – we have not updated the RP because of no interest from mfg.

Ziegler – I think it would be interesting, but proposal is restricted to certain cases. We'll proceed in more general way, as information is provided, and to provide high speed DCC. Difficult to make definite proposal if we have no experience with it. We want to start to make something. We have own update samples and will try to mix together .. Today it is separated. C mode or update mode. I think no objections to mix together.

Lindner – what is data rate?

Ziegler – 39k bits per second.

Lindner – That takes a long time to update. DCC is very slow to update sounds. We have used protocol for 8 years. We also used DCC to update sound. We needed 45 min to update sound. At capacity. Use 115k bits and at edge of what user will wait for. 38K is too slow now.

Ziegler – 10 – 15 minutes.

Fuchs – on streaming mode protocol – have done 250k. This cannot be done on full power bus. Standard was for multi environment.

Lindner – only on short distance. With normal track you can't do.

Fuchs – up to 5 min.

Ziegler- can use in operation in mode. Can update.

Lindner – must make high speed for _____ and other. Maybe you should test it.

Ziegler – different applications. Need faster for normal.... Can also transfer faster today because with DCC with 10khz, idea from 70s, all multi-systems, had treatments at 10khz. No reason to keep this way.

Lindner – DCC 2.0. What you are saying is that you are not satisfied with speed of DCC. Should not mix up service question. Should not update while loco is running.

Ziegler – why not?

Lindner – update 2001. never spend our users update on main track while running- for safety reason.

Ziegler – maybe it is not possible to update because need second memory to do it. In few years probably, as memory gets cheaper, not a problem. Also, different things, max would be layout, in full operation and update software, in decoders, is extreme, . Next thing – stop operations so nothing is moving, update each without taking separate. Should be open to all possibilities.

Brian Barnt – couple points. Looking back at Fuchs's original proposal – streaming – not fast enough for sound. Looks well for Calculation for sound file with 150k is 45-60 minutes.. Not going to happen over track, even with special feature.

Ziegler – why not?

Barnt – re: DCC not being fast enough. One reason DCC is set at 10khz – FCC rules about signaling. If we push track signal frequency outside range, so each layout is a transmitter and would have to be licensed as a transmitter.

Ziegler – used to be a 10khz in Germany, not any more.

Barnt – layout would act as a transmitter.. while it might work well in test layout, but once in home, would become a real legal issue. With _____ with 11khz, all experiments in bi-

directional, before finding loop - I just don't think pushing to higher frequency would be practical.

Fuchs – issue of physics – when you swing power, it is square wave and would be much more expensive. If new protocol, with carrier, would be different.

Ziegler – much faster registers today. Want to try and investigate. Define something without trying out.. We want to try over next months, or years. Some improvement should be possible.

Lenz – if you want to do, you can do, with different packets. . DCC allows you to use different.

Ziegler – only between our system and our decoders and would be long for others. Then will make more complete proposal.

Mueller – Possibility of high speed interference over rail. Electric system used 3 times bit rate average. There is something to be done. Factor of 3 bit layout, What can -- how many engines on single layout. Protocol which is more efficient to today's package... Information is in second byte. By way DCC protocol has grown, and keeping history with it. Tech s going on. 20 years ago, how much data in telephone line. Growth potential . not full power switch, but carrier on top of it. Not sure we can do. Pre DCC electrical system, use similar on top of DCC. All system gone full power modulation to ensure when you get power, you get info as well.

Think about faster way to transfer information over layout in normal. Not talking about streaming mode, update, on main track. Just to operate layout, faster rate would be good thing.

Ziegler – should not separate.

Lundner – are we talking about streaming or DCC 2.0

Ziegler – don't separate.

Lundner – how to integrate.

Lenz – good point. Has to be discussed in this room. We need approx 6-7 milli second to set ... and another 6-7 to switch light on. To have chance to combine speed step with function, or two-function byte, would accelerate whole transmission. I believe has to be discussed in this room. How to make update of sound files, and speed, we can never get agreement between all manufacturers. Everybody has started streaming update of decoders.

Ziegler – We should not separate all these things. When you want to update sound decoder it is huge amount of data, will be in future because memories are larger and larger, On other hand when you want to add single bit to one decoder, not long. I don't see reason it should not be possible.

Lenz – wouldn't it help if same codes for sound You can't take his and use in other.

Fuchs – packet format would be same, command station would not need to know format, only how to put on rail.

Lenz – decoder will accept but would not handle file.

Lundner – if you want container form to transport – to do bulk transfer from computer to decoder...

Fuchs – software talking would have to transfer data format from package.

Lundner - what is benefit?

Mueller – what modeler wants is to update decoders – whatever... with same piece of hardware. He does not want separate equipment from each manufacturer.

Lundner – have done for 8 years.

Mueller – one piece of hardware to program each decoder. Does not want to buy new program
Bronson -I plan to make programming track. It is worthless to program your sound system, because you all have different ways, and no standard.

Ziegler – standard – could use identical hardware.

Bronson – I want to build the hardware.

Lundner – in 1999 no one thought about updating sound. As more companies seem to see that there is market for such products and sound user upgrade, now becomes a topic. I can't see at moment because each is too difficult.

Fuchs – format in original was meant to be integrated into command station.

Lundner – you don't know if my electronics are the same as Soundtraxx'.

Voss were you topic leader?

Fuchs – major requirement is to increase speed. Started working on, but different people from different ways.

Voss- continue discussion with working group.

Barnt – is original proposal on file?

BREAK

Mike Bristol came in at break.

Voss – one thing I didn't' bring up. At BOD, at no urging by me, the BOD decided to look at regulations to have BOD change standards, rather than going to members. First we have to go to members to change the regulations. Then, BOD would be approving agency. They would do same as RPs – set up a comment period, maybe extend the comment period a little longer. BOD would be final approval.

Ames – If members approve. BOD has never not approved something that has come forward from tech dept.

Voss – they rely on my representation. Discussion of does it work or not, does not stop from voting. If there is enough pressure, they would vote no. If we get it wrong, then we look bad. Should mean that we can start moving DCC to standards - it took a year and half to change Standards for where only six months for RP. Has been very difficult to change standards. DCC operates totally differently than mechanical side.

Topic 0408251 – In Rush Current

Arnold is not here and no one else to speak to that. We'll have to wait.

Topic 9910241 – Analog Output Instruction

Barnt – started looking back through meeting minutes. In Ft Lauderdale, we approved as addition of the RPs – and never made into the version presented to BOD. We have documented, approved etc., that was implemented by three manufacturers – obviously works. I would like to move forward. Have copies of minutes from Ft Lauderdale.

Voss – get into RP and we'll move forward.

Ames - We have voted in meetings before, but we also go to rest of manufacturers to get votes of others.

Barnt – vote was done in meeting – which was procedure at the time.

I'll post to DCC working group and within 3 week comment period. Done.

NEW BUSINESS

Topic 0707092 – Large Scale Plug Pin Layout

Stan Ames - I've been approached by 4 manufacturers to fix large scale plug. Aristocraft has been in states for number of year. Before manufacturers in Europe (named three) .. None are good. Aristocraft plug has problem... no two loco have implemented in same way. Chinese are very inventive. Need to do one based on Aristocraft - not to change all the pins...new will have, existing, will switch out one or two a year. Conrovers, is backwards compatability Approach one – document where problems may be and manufacturers can build decoders for that and will know where skeletons lie and chose to put connect to pins or not. Option 2 is to key new plug so that old decoders can not plug in, or new decoders can not plug into old. Whichever way you want. We've keyed new plug so can't plug in backward. Have option to the new and plug into old. Some manufactures can do. We have 2-4 weeks to decide because products are being built.

Bronson –aren't you blanking the female and remove male pin that matches and have position so that have orientation key and key that prevents whichever you want to blank.

Ames – two rows – could key so don't match. Most manufacturers want to support old loco.

They've chosen not to connect – if you put in a certain loco – ideas to just bend pins that aren't needed. Chinese put in track connection and no one is using those pins.

Voss – we could take a vote here.

Ames – not one here, except Lenz, -- those

Lundner –I think keying is a good idea to prevent users from doing something wrong.

Ames - is keyed to not plug in.

Barnt – if you take new decoder – does it have pin, or socket...has pin. On the socket on the new one – snip a pin...

Ames – 24 pins, 1024 has a fill, if you plug in backward you can't.

Barnt – pin 24 is not filled.

Ames – don't have pin 24. Pretty hard to plug in backward., but you can. Real problem is that some of the pins are randomly connected. Have documented that they have found 'every loco' so mfg that are building decoders know about it. Could build so that new decoder can not plug into old board. Would put intrusion in that place. Manufacturer says I'm not going to put intrusion.

Karl Kobel – opt for documentation approach. As opposed to having every decoder have something new on it for all time.

Ames – will contact AJ and get something. I'll document, and put up so we'll have time for review. Will have consensus on this.

Voss –provide companies that have direct concern.

Ames – some do not wish to be identified.

Voss =--interested parties to be notified.

Mueller – we have similar problem. In Europe some companies have agreed on different pinout from limbrogth....just plug in

Ames – only in one loco.. Large scale plug in Europe....Rowler – one -- stress one – loco at this time. Does not have pins that US mfg need.

Mueller – make people aware that there are again, people working on another type of connector.

Topic 0707091 – Serial DCC

Brian Barnt named as Topic Leader'

When we did DCC in 92 – 93 – we had concept of radio control...put place holders in, but did not do the work. What we are trying to do is step signal and power. So that DCC signal – from where it comes from goes directly into decoder and the control of the decoder can work. As for decoder, will be same as seen everywhere else. Current, etc. being the same, so that all works. Haven't tried with others. Provide DCC signal at 5 volts. Does not follow S9-1 - says 7 volts in power, and this is 5 volts and is not on track.

Lenz – super imposed with DCC voltage. Both passes.

Ames – question of current – both phases, and ground so can work either way.

Lenz – referenced to minus zero.

Bronson – TTL chip.

Ames – impose from track.. using with radio – does not matter where signal comes from - track, module, remote ...Don't be concerned from where, just at this voltage and goes into decoder.

Lenz – as far as I understand – power can come from other sources.

Bronson – question -- dose it include a ground reference. 2 or 3?

Ames – two...there does not have to be ground reference. Receiving with different wires... Plus and minus does not have to be connected.

Bronson – how can you say 5 volts?

Lundner – Source has to be connected... decoder ground.

Bronson – common reference?

Lundner – ground and signal.

Ames –which ever ways

Lundner – possible to say between 3.3 and 5 volts.

Bronson problem to world.

Fuchs – reason I mention, have to consider rail – attenuation. Has that with 12 volts with another bus.

Ames – going to work with manufacturers this weekend...I guarantee what I've written is wrong. What is the right way of putting words in here from a technical sense. Additional section of the standard that would have to go in. Will go through the process.

Lenz - can be done in easy way... use voltage level, instead of having plus/minus differential. In standard plus minus 7 volts. Can you change this to 5?.

Ames – won't work.

Lenz – issue for programming.

Ames additional section. If you want to provide DCC interface, this is characteristic.

Mueller – what we may have to change is standard – 'this applies if you have signal and power - will need 7 volts. What Stan wants to do is send low voltage. 7 volt minimum will always have to be applied if you want DCC info from the rail. Either power is not coming from rail, then standards don't apply.

Lenz – or difference. Design to handle max 24 volt input from train, to say we will have extra pin or two, and extra input from micro – you define voltage level and power supply and independent from track voltage. You can use wiring to support from battery, everything would work.

Mueller – not talking about how to connect to decoder, if you send lower power signal over track, would be standard (or by air_Lenz) this would be standard. We would allow different method to apply. Would not be able to change.

Ames -no changes necessary.

Lundner – another input on the decoder instead of feeding signal over track, use these two pins and wire to whatever you want. Then only have to tell decoder if get two streams, then we must decide some priority. No interchange on the DCC. Find voltage level and connector.

Mueller. One set up to accomplish – power from internal source and DCC on track with low voltage and low power, do not need many boosters, with single could run large layout. Then signal on track that does not follow current standard. See that Stan has several different setups, one would most likely collide with current wording of standard.

Ames – not really. I am talking about standard conforming low power command station

Dick- jump back to common, differential mode. Would have to put in specs. Can you have your different running at 27 range. Or need common.

Lenz – we have some use of different mode, output existing radio receiver, puts in decoder delivers signal, between 0-5volts going up and down.

Bronson – then that's not ..

Bronson we are not suggesting how – just say.

Brian - what you are suggesting is another section of S-9.1 to deal with power transmission.

7 volt, Mueller is concerned about.. His is section about not having power through the rails.

Lenz – does not say you can not get power through rail...it allows you to.

Barnt – the way the

Fuchs – if lower power ...data is being transmitted at low power. Why need 5 volt.

Socha-Leialoha - ask question. You are talking about new signal... not as much problem with noise.

Lenz – DCC signals as we have it.

Socha-Leialoha – situation where you are dealing with different voltage...have opportunity to

Lenz – outdoor layouts are more sensitive. Lot of outdoor users use radio control. Newest radio control units use DCC as protocol. But you have radio receiver and out comes DCC signal, and have input to booster. Do not need 20 volt to booster. Can use 3-5 volt to drive booster to get energy for layout. Somewhere. To receive DCC from output of receiver, goes up and down between 0 – 5 volts. Therefore 5 volts coming into this proposal. This is background of why it is being used.

Ames – 2-3 amps. If you use separate power and signal... can use trade off shelf –

Topic 0706181 – Model Railroad Control Bus

Bill Ataras – first presentation. What DCC does. Standard interface on decoder. Essentially CBs that control device. Do not have standardized controlling for layout. DCC for controlling trains.

Proprietary that works.

Proposal that does on layout control as DCC does for train world. We have a transport protocol mechanisms, allows messages over substantial distances, standardized format, standardized

Got interchange, would have same flexibility. Module, that would sit behind classical control panel, with leads, etc. Instead of wires, would send out message. Would tie panel together....12 volt and ground for power and 6 conductor flat ribbon in and out. That would be all from control panel to layout. Thru out layout would have controls for signals, lights, etc. Everyone would get every message. Each module would control what messages it uses. Data rate is subhigher than busses avail today.256 data bit transfer. Not sure ready to go Throttle bus to control.

Provided one RPs for turnout control _____. Would use toggle for turnout. Or push buttons.

One thing to do, is allow push buttons, for turnout, Turnout controller can listen to block detector. Lots of adhoc devices and have interchange. In testing phase. See Summary of MRCB Proposal –

Topic 0707081

Gil Fuchs - the CAN Group. One – Started with this about 4 years ago. Motivation was same – controller for accessories. Want to make standard with and between mfg. Came up with don't need to reinvent everything. Existing tech in mkt. Use CAN bus – used in automotive and aerospace industries. Formed a group in 2005. Gathered data and argued different approaches. Some wanted to use for other protocols. Our members came from engineering, documenters, standards, etc. We wanted to keep as open standard... no patents, etc. CAN is open standard. Development came along similar to Linux.

Keep cost of ownership low. At time CAN was considered expensive, but cost has come down. Maintenance is high cost... but can avoid by using existing chips, etc. Solution has to be extensible.

Has to have multiple access. Allow peer to peer, master –slave or broadcast. Ended p with broadcast. Adequate data rate commensurate with simple wiring requirements and unit cost. Make best use and leverage existing ideally accepted standards and hardware. Lower TCO by avoiding compatibility issues caused by proprietary implementations. Avoid re-inventing where it is not necessary. 125kb is appropriate for data rate.

It is internationally recognized, industry standard BUS. This fulfills all requirements for a LCB, which is fully supported by readily available hardware which performs all the message transport requirements. Easy implementation, lower TCP. “Robust” with good error checking and noise immunity. Tried and tested in the MR environment as some have been using it for many years. It is an open standard, avoiding patenting issues etc.

Features – two standard formats...data area is limited to 8 bytes, compromise that single packet to take over for very long. Two formats of header, original had 11 - now have 29. Elected to use older of 11. Risk processor approach.. Most commands are very short – typical

ADD Gil's Powerpoint presentation.

(Lee Riley and Fred Silverson came in)

Topic 0707082

John Socha-Leialoha

ADD his power point presentation

DAV – next meeting will be in York I Sept...we need response and commitment ASAP so that we can reserve room, making reservations directly with hotel.

18 names, but you have to book directly with credit card.

John –
ACCNET PROPOSAL

Since I've never met most of you. Intro – those from Europe have heard of Norton Commanders... Degree in Electrical Engineering and Physics. Software architect – for MSFT.

Effort to create accessory - injection molded – need the electronics to go along with.

Similar to Fuchs's presentation.

INSERT John

's presentation

Discussion on Cost – Bill – microcontroller with CAN \$2.80 difference....

Stand alone MC2515 \$1.50 controller.. cheapest processor controller –

About \$2.50

If using CAN controller then doesn't have communication issue.

Peter Ely –

Bill – my chip is handling all product application, and we don't need any other chip.

John - \$1.50 – stand alone CAN controller that can be hooked up

Bill – I'm getting full blown for \$1.49, then need transmitter chip.

John – price difference is \$1.50 – need transceiver for either application.

We really looked at the price difference.

Lundner – Is this bus or -- because customer does not maintain order.

John – drops, the shorter total wire. – based on CAN literature.

Brian – CAN similar – widely used in industrial world. Set up advisenet, there are good features, when first issue of Bus control issues came up. How to teach a user to configure with producer/consumer.

Walter Naumann – came in

Brian -

John – when using device – significant overhead.

Stan – what I've learned to date, the RS45 approach the wiring doesn't matter. With the CAN approach, the wiring has to be more specific.

Bob Jacobsen – responsible for 65k CAN nodes. Essentially identical...if you want to obey the standards, very similar. If you want to see if will operate or not, it will. Speaker wire will or won't work under same conditions. Differences are extremely small.

Barnt – device is superset of CAN. Has standard connector, 4 wires, 24 volt ground. Like 485. not much difference in wiring; foil shield is fine (doesn't have to be coaxial).

Lundner – question – software overhead for communication. Some have to have lots of software. How many memory.

Barnt – 100 instructions for handset. 100 C instructions.

John S-L – haven't implemented yet – took a lot of code. Basically reading and writing registers, to transmit message and to receive you get interrupt and get read over ... Implementing, processing messages, is going to take more code than with CAN.

Lundner – Difficult to implement?

Fuchs – we don't need bus master for CAN layer for CAN id. Do manage node IDs.

Lundner – need repository?

John S-L– no... What happens if remove device from network...if you remove source of message, then devices expecting, then won't do. You don't break bus . How do you make sure of numbering complex....Part of application is mechanical of numerating nodes, event ids, software program can go out quickly and build list of everything on layout and how it is set up. You don't have to have files that you've saved. You can reconstruct from layout.

Lundner - plug in new node in terminal, what happens?

Jack Treves – this enumeration and configuration is done – I'm paid to do this. The process works very well. If you put new device on network before you enumerate, then nothing. Go into enumeration and configuration mode and build table, reassign new . Go and then assign real node number. Don't do anything with Node 63. Replier bit – to renumber. Discussion of how to do.

Lundner – in your approach, every LED or toggle is identified as node?

John S-L - ; Element. – Node has CAN id. Each node can deal with many device or element (same definition).

Fuchs – if you buy into CAN approach, then have a lot of things already built in. With others, you have timing problems, etc.,,

Brian – Peter also uses CAN.

Lundner – good compromise, if you go for too high speed, then have wiring issues.

John S-L – update...programming 1 megabyte, attaches to computer.

Bob – do you tell your customers about how good their wiring should be, and what they should do.

Lundner – we have taken care on physical, and certain switches,, made termination system; for wiring we in lur link; star network; not real star – with branches, around 2 liters - called drop(

John S-L - We've tested technical life and have not identified any practical problems.

Ziegler – there are some problems and no one knows why.

Fuchs – is RS45 going to provide higher reliability – I think not.

Ziegler –should provide info to customer with info on potential problems.

Fuchs – if using for cabs, and mobile – much higher volume, than with this

Ziegler – 1000 mess/seconds.

Dick – Question – I would like to highly recommend that it not be restricted to accessories.

YES, but need bridge (John) to existing stations.

Peter Ely – you envision connecting between existing command and the bus.

Dick Bronson – should be able to have new bus going through new command station , the rails.

Voss – no restriction on that, we are just concentrating on accessories.

Karl – many years before these manufacturers are going to change throttle bus.

Bronson- call it layout control bus.

Voss Called "NMRAnet" and we have applied for a trademark.

Bill Ataras – summarize differ.

CAN you buy lower level protocol. With 485 you have to write about 200 machine instruction to handle low level of code. In terms of overhead, a little. CAN you have cost premium. Bit rate is determined by bus rate, found on internet at 1000 ft - 125 kilobits, per second. With 485 approach have arbitration ..bus rate dependent, once select, can verse out data at megabit /second. One arbitration is complete, can zip along at many times what CAN offers.

Bronson – you need pic to do timing.

Ataras – only during arbitration

Bronson – means that if you are trying to design bridge device; in one direction is different than opposite. Not problem on accessories, but big problem on high data rates bit... and continue to pay attention.

Bill – overhead is 5%

Bronson – timing is issue.

Fuchs – arbitration phase – CAN engineers spent lot of time because involves synchronization. Building own is difficult, and making it reliable. I would like to know what testing backing up he claims. CAN testing is quite extensive.

John; - Don did implement our own arbitration scheme. Put the RPs on working group site. HE is familiar with CAN. One – overhead, more importantly, is the interruptability. If you are using CAN, ge it thru implementation that has gone thru lots of testing

Voss – I would like to between now and next meeting, get direction as to which way you want to go. Only fair to the three groups. I may put up three question.

NMRA is concerned and wants to make sure that whatever system is adopted, NMRA has control.

John – Gil and John have merged their group....make best efforts to merge.

Stan Ames:

Over past 12 months, the number of interchange problems has grown substantially. Has been growing. What is the solution the manufacturers wish to start doing?. Advertisements are starting against DCC. The interchange problems are getting worse, and therefore opening to others.

Hornby, Broadway Ltd, Newline Products, MTH, and some well known – very bad year. Have to figure out a way to deal with interchange.

Voss – we are buying products off shelf; test; and then publish results. This is buying off shelf. Policy in past was that if product was not presented, we don't talk about. If not submitted, we don't talk about it. IF product is on market; then we test; and will publish results in Scale Rails. IF manufacturer provides product prior to marketing, then we will work in confidence.

Ziegler – this policy has not been to now.

Voss – 2-3 months ago. I posted message on DCC working group. The President did approve.

Ziegler – do you have enough volunteers for this effort.

Voss – we need more. We will do worst offenders.

Bill Ataras – do you have modification to that strategy if product has already been awarded a ‘warrant’ we will try to work with manufacturer before we go public.

Voss - we have ‘self certification’ that manufacturer fills out. They send to us, I will make a judgment as to whether manufacturer understands the certification. Without testing, I can issue warrant; but if someone comes in and challenges it, then may have to withdraw warrant. I am trying to speed up process. Trying to help manufacturers develop new products in confidence and done in timely manner so you can have literature printed. I am willing to take chance that you have done correctly.

Ames: If doing self inspection and certification is there a set of tools that are common?

Voss – you are better at knowing about the test tools that we have. If here are questions about interpretation of data- you’ll ask. We can provide.

Stan – if we don’t have common set of test procedures, then self inspection is meaningless.

We’ve gone thru 10 years, with products going thru tests. Not complete.

Fuchs – that could be recommendation. If you have specification for someone to work against.

Stan – I contend that becomes a meaningless thing because provide the test. Protects mfg because they can provide sheet that matches.

Voss – need to see the results.

Ames– then you must provide the test requirements. Publish the test to start.

Bronson – how many of new lack of inter-operability are related to service mode specs are nebulous.

Stan – most of service modes are key violations of existing RPs. Few that there are mistakes in the RPs that have caused concerns. Manufacturers are orders of magnitude off – not just a little, or interpretation.

Bronson – we need to say more about what has to be done.

Voss any suggestions – please provide. We need o make testing more accurate.

Lundner – simpler approach. Test benches – we try to test implementation of specs, maybe we could say define a set of new products in he market, new must agree with . Most of issues come up because people buy decoder and can not read...something else. I think it is important for mfg of decoder to test with every available ... on market. Define set of products that should be tested against. Also, only what customer is interested in .

Peter Ely – is someone tracking

Ziegler – most problems appear in some cases where you use system, decoder, configuration it works when you take normally, then someone programs the cable and then doesn’t work, because no one knows why.

Lundner – my experience is most are programming issues. Cured very simply.

Ziegler – customer relies on current in decoder.

Lundner – this is the thing. Biggest problem in market at moment.

Ziegler – depends on transformer – flow of voltage and current.

Lundner – 99 % can do without problem. Why should somebody not do it ,, may need lots of components.

Ziegler normally it works.

Lundner – but we are talking about cases where it doesn’t work.

Bronson- specs from NMRA should tell us where the problem is – not just that is doesn’t some times.

Ziegler – two systems should be able to read all values. Define whole configurations, how long cables are etc.

Peter Ely – this whole conversation – does not show up in topic list.

Voss – I don't have secret list.

Ely – flaw if something this significant is not being

Apparent flaws and standards and second would be blatant disregards of standards.

We have to deal with the blatant flaws, and set ground rules.

Voss- is there someone here NMRA member who wishes to take on that problem with standards.

SILENCE.

Barnt – let's get topic going to see what is going, then see who steps forward

Known – 0707261 –

Current violators of standards – blatant violations 0707262

Ames – one of few places is between minus 4 and plus 4 volts, ...if you take scope and looks at Hornby – not only are there spikes, must be big enough that it will burn most decoders on the market. Some are doing as we specified,

We need to stand up and say that it is not DCC. Let mfg describe how to describe, but not was a DCC.

Voss – need volunteer to work. Mueller will oversee it, but not as topic leader

Any other issues.

Mueller- I have been approached.. We need what is needed, programming with special CV 19 and CV 20 - obviously being left open WE have to build things around it to be consistent with long addresses. Many people said no one will need it, but we are at point where we do.

Fuchs -

Adjourned - -at 11:55 –

Meeting at York, 20 Sept 2007

Meeting in Nuremburg....have problem with some want to have meeting at same time.

MFG have to make up their minds as to when they want to have.

Feb, July, and Sept -- we have only this meeting in US very short and not enough time to deal with all the topics, and do not have all mfg because they are setting up booths and not available.

Brian – we had meeting in Durango, and Cleveland that was separate from any other meetings.

DAV

Stan – decision do you really want to accomplish real time work in meeting, then you need more than one day. Or is this more of summary of what is going on.

Voss – look at as summary, and reacquaint with each other and personalities.

Stan – hard topics, need dialogue in real time. And don't get that outside meetings.

We'll make York meeting at least a day and a half to get things done.

Next decision -- Nuremburg meeting Mon or Tues - last time was Tuesday.

We'll ask question in York about the Nuremburg meeting.