

Notes from Wednesday evening, February 22nd 2006, NeSSI discussion group at IFPAC 2006.

NeSSI -- what communication bus to use? Based upon the general consensus, it is time to move forward.

The workshop is composed of short presentations of the pros/cons and implementation issues surrounding three communications bus options: Foundation Fieldbus (FF), CAN Open IS and I²C. Presenting the three technologies were Terry Krouth, Emerson Process Management for Fieldbus, Tracey Dye, ABB for CAN and Robert Farmer, Siemens Applied Automation for I²C. Discussion was moderated by Jeff Gunnell, ExxonMobil Chemical.

- Highlights from Terry's presentation. ([Link to PDF](#))

H1, at 33kbs, is an IS bus running at the device level. The "linking device" serves to concentrate packets of information from the H1 and transmit them at 100Mb speed on the HSE level (High Speed Ethernet). The linking device contains flexible function block logic. This logic could be utilized to provide batch-type operations; essentially SAM functionality with a link to an HMI. H1 devices have been commercially available for about 10 years. Estimate is that 200K FF devices are sold every year. FF interactive HMIs, handheld devices and I/O modules/units are currently on the market. FF also has the benefit of required interoperability testing to ensure devices can communicate with each other. Terry addressed two common perceived problems regarding FF technology:

"It's too expensive. For a device, FF is a \$650 option." Terry answers that with Emerson's example(s) where FF is a \$65 adder. It should be possible to bring the cost down if a 'consortium' of manufacturers would address the issue of non-commercial interface electronics. The interface requires an analog media access unit (MAU) (which Emerson could provide as a commercial product), a controller chip and the stack software. Terry suggests the consortium could work to find a manufacturer for the controller chip and agree upon an MAU.

"The (electronic) footprint is too big." Terry passed around an Emerson FF H1 interface card which is approximately 1.5" in diameter.

- Highlights from questions and discussion regarding FF.

"I understand the Foundation license fee is \$65K to join FF." -- Bob Sherman, Circor.
Terry -- The Foundation fee is based on a sliding scale per corporate size (gross sales). The top of the scale, for top tier companies like Emerson, is about \$60K per year. The scale starts at about \$5K. The stack software must be purchased from another vendor with a license cost that "is not that bad".

"The MMI and functional block programming -- how does that work?"
Moderator -- table this, not within scope of discussion.

Noted later -- FF currently has an 85°C limit.

- Highlights from Tracey's presentation ([Link to PDF](#))

Tracey expanded upon a meeting with Cyrilla Menon, with CAN in Automation (CiA) and a group of manufacturers here at IFPAC. The group included ABB, Siemens, Circor, Parker and Swagelok representatives. The discussion focused upon a proposal to incorporate the NeSSI specification in to the ISO 11898-9, high speed (HS), low power/intrinsically safe (IS) CAN bus specification. The IS CAN specification provides a system with the following highlights:

- 3.3 V transceiver (Texas Instruments technology now commercially available with a tiny footprint at \$1.65 for the card)
- 10 meter maximum bus length with a 10V max. and low amperage
- "self defining system"
- Interface is via a server/client device reporting to/from each bus circuit. The communication from this server device would be via ethernet, fiber, OPC, etc. to the "outside world".
- Temperatures to 130°C
- High component use in the automotive, rail, medical and aerospace industries (approximately 10 million per year in production)
- Robust and cost effective
- Currently there no IS capable CAN system devices available

A draft of the IS CAN standard has gone out to the 400+ CiA members for comment. The proposal is for a "revision 2" (including the NeSSI spec.) to be finalized at a 3/22/06 meeting with CAN in Automation in Cleveland for final submission. Results from this would be reported at CPAC. The potential is for a completed standard by YE06. Again, this requires a consortium approach to work on the NeSSI friendly specification.

- Highlights from questions and discussion regarding CAN.

"Why create a new IS bus? Why not HART?"

Response -- HART is not a true, multi-drop bus. HART still requires IS barriers which must be HART compatible. The system is traditional parallel wiring infrastructure.

- Highlights from Bob's presentation. ([Link to PDF](#))

"Let's Do It!" Bob presented a discourse on the philosophy of what NeSSI is doing (refer to his presentation). I²C is "extremely inexpensive". Intrinsic Safety is provided by third party devices as the bus was not intended to be outside the electrical box. Siemens will move forward with I²C systems as it is already a part of their platform.

- Highlights from questions and discussion regarding I²C.

"Back to the fundamental question of the value (\$) of NeSSI. How does it make us money?"

J.D. Tate, Dow

Response from Circor - integrators utilizing NeSSI have reported savings of 30% to 70% (above the material costs) for major projects.

- Open discussion items:

Bill Floyd's (ExxonMobil) perspective. You can arrive upon standards in several ways. One, the market will create it. Secondly, you can make organized consortium (such as ISA) decisions to

direct the standard. For the market to create a standard, you would need a major manufacturer to drive a particular bus. They would need to attract sufficient component manufacturers to provide devices. Then, you would need a customer who would purchase a chunk of systems to provide the investment return.

What are we asking the NeSSI Steering Committee to really struggle with? Is it the role of the Steering Committee to push a standard? CPAC is not a standards organization. The Steering Committee should speak in terms of functionality, as the NeSSI standard has always been. In the process control and analysis industry, we have a history of multiple paths which finally arrive at a more common destination. These paths may result in some rework, hopefully not too significant, to match the final model. Functionality, not bus specification, will be the direction forward.