



What's a Plugfest and why should you care?

BY MILTON DAVIS

If you have products you want to test using DMX512-A, RDM, sACN, or draft RDMNet protocols, please bring them to the next Plugfest in Dallas, TX, January 20 – 23, 2017.

CREATING NEW PRODUCTS for a market with increasing complex technological requirements is a challenge. It's even more difficult for small businesses and independent developers. No one can be an expert on all aspects of technology. When the entertainment industry introduces new ways for devices to interact with one another, any company that wants to join in needs to get educated. That can be especially daunting for the small manufacturer with limited resources and a design team of one or two people. There are no books to read or how-to websites to visit. In the case of control protocols, such as RDM, sACN, or RDMnet, the only references available are the standards themselves.

While task groups attempt to write technical standards to be as clear and specific as possible, there are always points that can be interpreted differently by engineers attempting to implement the standards. When language barriers and cultural differences come into play with engineers from countries around the world, there can also be conflicting points of views on the same paragraph within a standard. This is natural. The same varying viewpoints even take place between the authors of the standards when they are from the same country.

Here is an example from an actual situation of how interpretations may vary. The RDM standard (*ESTA ANSI E1.20*) contains an optional feature to store user definable text in a device (such as a luminaire). The text is intended to help the user identify the device or perhaps its location. The label *may* be as long as 32 characters. However, what happens if the fixture only has enough space in its memory for 30 characters? One engineer felt that it would be proper for the fixture to return a "too big" error when requested to store a 32 character label. Another engineer felt that the device should store as much of the label as it could and just throw

away the last two characters. Yet another engineer felt that the fixture was not compliant with the standard at all because he thought it *must* be able to store all 32 characters that *may* be present. This particular issue remains unresolved to this day. The standard may be revised someday to clarify this fine detail. The point is that all three engineers came to different, valid conclusions by reading the same paragraph in the specification.

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The difficulties multiply when products are developed in a protocol vacuum. A well-intentioned effort to implement a control standard can result in products that are only functional with other products of the same brand. This is the result of incorrectly implementing a standard on all parts of a system. When any truly compliant device is introduced, the entire connected system begins to fall apart. In order to best serve the end-users, any product that claims compliance to a particular standard must be interoperable with other products that claim the same compliance. However, with many interpretations possible, how can this goal be achieved?

It might be desirable to have an independent third party that

could test and verify compliance. In safety standards, we use organizations such as Underwriters Laboratories (UL) and Intertek (ETL) to test products and verify that they comply with relevant standards. Unfortunately, the entertainment business simply is not large enough to justify the existence of analogous organizations. There have been attempts to offer this service. There was a brief effort by one manufacturer to offer RDM compliance testing, but it proved to be an unsustainable business model. The Open Lighting Project currently offers a good set of software compliance tests for RDM. This is an all-volunteer effort which has yielded outstanding results. However, only the RDM protocol has been addressed to date. Also, hardware and timing issues are not part of the compliance tests offered at this time. In commercial offerings, Goddard Design and Benjamin Electric have introduced the RDMIntegrity package which offers tests for RDM responders. When used in conjunction with the proper Goddard Design hardware, timing analysis functions are also available.

Without a third party to evaluate products or resources to test with equipment from competitors, how can any manufacturer guarantee that their gear will “plug and play” with someone else’s? Beyond that, how can a technician perform any troubleshooting when two pieces of gear will not work together due to differences in interpretation of a standard? This can result in endless finger-pointing between the two manufacturers and extreme frustration on the part of the user.

It is primarily to answer these challenges that the North American ESTA and European PLASA Plugfests came into being. The ESTA and PLASA Plugfests have been taking place since January of 2009. The organizers fully acknowledge them as more like “geek fests.” It’s a special breed of person who gets excited when a single LED on the other side of a room turns on after executing a computer command. That’s the type of people who attend these gatherings. There are no sales people. There are no office politics. There are no judgements. Most importantly, there are no silly questions.

Beyond the technical people working in a room until early hours of the morning, it is important to see the motivations and objectives for the event. The Plugfests present an opportunity for a sole proprietor to connect their prototype equipment to gear from a wide array of other manufacturers. Having the same exposure to other manufacturers’ equipment usually involves a trip to a local venue where the owners want to be involved and the developer must avoid any perception of failure in a test. The Plugfest environment encourages both failure and experimentation. The failure of a test is viewed as valuable information to all present. It demonstrates both how things work and what can cause problems in the real world.

It’s an environment where direct competitors can discuss interoperability technical details without fear. An open dialogue takes place centering around the protocols being tested. The specifics of how anyone structures their software is unimportant. It is how the products interoperate with one another that is key to

a successful Plugfest. However, if a participant asks advice on such matters, many of the others attending are more than willing to offer input.

Another attraction to Plugfests is the caliber of the participants. Many of those attending are the lead engineers from the companies they represent. Some of them come from companies outside of the entertainment industry, which provides a fresh perspective of the unique issues we face. The North American Plugfests are typically scheduled to coincide with ESTA standards meetings. As a result, the authors of the standards are often present. When questions about the intent of a given clause in a standard arise, a discussion with the actual people who wrote the clause can take place. This provides valuable input and guidance to the engineer implementing the standard. Equally important, it gives the authors insight about the standard itself and where future revisions or clarifications might be needed. By spending face-to-face time together, we build a community with a common set of definitions and goals. In short, we are all “on the same page.” With this common understanding of the standards, we have a much better chance at building truly interoperable equipment. The Plugfest then begins to serve as a voluntary compliance testing lab. While there is no label to affix demonstrating compliance, successful testing at a Plugfest can give the manufacturer some assurance that their product will not be the source of problems in the field and thus enhance their reputation.

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At the most recent Plugfest in Dallas, new participants received a warm welcome, a place to set up their equipment, and an introduction to the rest of the group. The conversations that took place ranged from interpretations of the control protocol standards to very nuts-and-bolts discussions about subjects such as line termination, port turn-around times, and unit loading. The new participant quickly realizes that they are not only with a group of engineering colleagues, but that many of the other participants are the actual authors of the standards being tested. This allows everyone to get “on the same page” so far as the intent of each clause of the standards are concerned. When there is a question about what is meant by any part of a standard, those who wrote the section can

be directly asked about their intent. Best of all, this expert advice and insight is available free of charge other than the travel costs to get to the event.

is in the medical industry. She has a note pinned to the wall above her desk that reads “Is it in the best interest of those we serve?” That single simple thought guides

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Those who are new to the Plugfests often comment about how easy and informal the event feels. Others describe a “no-ego platform” which allows the participant to ask basic questions without being looked down on. This environment is especially helpful for the small manufacturer with limited resources. With all participants on a level playing field, great things can come from each person. Participants often come to Plugfests with a barely functional product. By the time they leave, they often have a solid implementation saving weeks compared to working on their own. Such success stories easily justify the expense to attend.

As each Plugfest begins, I am reminded of the true objective for the event: to insure interoperability by verifying compliance with control protocol standards. My wife

her work every day. For our Plugfests, I keep the same goal in mind. In our case, “those we serve” are the end-users. The whole reason for these events is to improve the lives of those who use the equipment we design. By finding and solving the compatibility problems in the controlled environment of the Plugfest, we prevent the frustrating finger-pointing situations that cost manufacturers time and money, even when it might not be their equipment causing the problem. A Plugfest event provides confidence that things will work in the field. Through these efforts, we also build a reputation for producing workable standards that truly allow products to “plug-and-play” together. The work often uses a simple LED light on the other side of the room to represent the success of a test. These simple test results often enable

massive systems to perform as designed in the field. When the group of “geeks” gets excited about the LED, know that they aren’t just seeing an LED turning on; they see the possibility of the successful tour or show this accomplishment represents.

ESTA and the Plugfest Task Group welcome new participants. If you have products you want to test using DMX512-A, RDM, sACN, or draft RDMNet protocols, please bring them to the next Plugfest in Dallas, TX, on January 20 – 23, 2017. Details can be found at www.estalink.us/plugfest. We encourage developers and engineers to attend. Please bring your product in any condition. We see devices in every stage of development from early prototypes through to finished production units. Crashes and instabilities are part of the process and no one will think less of you, your company, or your product because of them. In fact, when a product fails or crashes we often hear another participant say something like “Hey, my widget failed just like that last week. Here’s what I did to fix it!” Everyone wins. We are all being served. ■



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The next Plugfest will take place in conjunction with the ESTA Technical Standards meetings at the Dallas/Fort Worth Marriott Solana, January 20 – 23, 2017. Details can be found at www.estalink.us/plugfest.