

Scope Summary for Modernization Plan 3 (MP3) “Acceptance of Digital Equipment” Addressing 3rd Party Certification of Characteristics for Commercial Grade Digital Equipment

Problem Statement:

- Nuclear licensees do not have a wide variety of options when it comes to selecting digital equipment for safety related applications. Most digital equipment used in nuclear safety related applications was not designed “from the ground up” under a 10 CFR 50 Appendix B Quality Assurance program; therefore, it must be evaluated and accepted for nuclear safety applications.
- Many, if not most, cases of commercial grade digital equipment acceptance require first-of-a-kind efforts, involving uncertainties with respect to duration, cost, and overall success. In some cases, the effort is hampered by lack of Original Equipment Manufacturer (OEM) involvement, driven by the fact that the nuclear market is too small to justify OEM resources necessary to support this process. Many process industries avoid these uncertainties by deploying digital equipment certified by an independent third-party to be appropriate for use in systems required to accomplish safety functions of a particular Safety Integrity Level (SIL).

Desired Outcome:

- The desired outcome is that Industry believes and the NRC endorses that a previously performed SIL-~~3~~ certification constitutes an acceptable demonstration of commercially available digital hardware and software basic quality.
- In other words, the specification of SIL-~~3~~ certified equipment can be accepted as fact, and as-verification of certain dependability critical characteristics per NRC endorsed EPRI TR-106439 (Guideline on Evaluation and Acceptance of Commercial-Grade Digital Equipment for Nuclear Safety Applications).
- This acceptance includes the elements within the scope of an independent third-party SIL ~~3~~ certification, and it would exclude those elements not within such scope (e.g., application specific functionality and performance critical characteristics such as ~~environmental compatibility and response time~~electro-magnetic compatibility which is addressed in evaluation guidance).

Benefits:

- Relieves the NRC of the burden associated with ongoing reviews of commercially available digital I&C equipment (especially considering the rapidly changing product landscape and short product life cycles).
- Allows the NRC to focus regulatory resources on the **application** of DI&C equipment to nuclear power plants (which it is uniquely qualified to do). In this scenario, the NRC would continue to review and evaluate how licensees’ apply these certified digital platforms and devices in their facilities (including user-specific configuration or application software), as dictated by the existing regulatory framework.
- Leverages global best practices and reduces regulatory risk for both licensees and suppliers.
- Facilitate the appropriate and timely replacement of equipment at the end of its lifecycle to maintain reliability/safety margin.