Digital I&C Strategy

NEI DI&C Working Group

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NRC Public Meeting

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Overarching Principles

- Incorporate defined boundaries
- Apply risk-informed insights
- Leverage robust design processes
- Capitalize on international operational experience and standards
Discussion topics

- Identify desired outcomes
- Identify barriers to progress
- Propose solutions to overcome barriers
- Summary
What does the end look like?

- Utilities successfully design, develop, implement, and license digital upgrades to protection and control systems to support plant modernization and improve plant safety and reliability.
Barrier #1 – Common Cause Failure (CCF)

- BTP 7-19 guidance has evolved over the years and expanded the scope of the SRM-SECY-93-087 policy

- Concerns with SRM-SECY-93-087:
  - Deterministic solutions to mitigate the potential for CCF
  - Outdated and not aligned with current DI&C technology
Solution #1 - CCF

- Revise BTP 7-19 to be consistent with the concepts and scope of CCF treatment as described in Revision 4, a more risk-informed and graded approach.

- Develop a Digital I&C Policy that reflects a more risk-informed and graded approach to safety.

# Solution #1 – Potential Solutions to CCF

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<td>BTP 7-19, Revision 4 Concepts</td>
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<td>Approval of NEI YY-XX Develop DI&amp;C Commission Policy</td>
<td>Content of RIS 2002-22, Supp. 1 Captured as Durable Guidance</td>
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Barrier #2 – Software Development Standards and Guidance

- Software development standards for safety-related SSCs are not commensurate with safety and not aligned with current technology

- BTP 7-14 Guidance does not follow a graded and risk-informed approach
Solution #2 - Software Development Standards and Guidance

- Consider guidance from international standards associated with safety-related software development

- Revise BTP 7-14 to follow a graded and risk-informed approach that is flexible (i.e., not constrained to prescriptive adherence)

- Leverage digital I&C operating experience from the international nuclear community (e.g., Électricité de France)
Barrier #3 – I&C System Architecture Development

Chapter 7 of the Standard Review Plan (SRP) has fragmented and incomplete review guidance for I&C system architectures
Solution #3 - I&C System Architecture Development

- Consider international guidance related to the design and development of I&C system architectures

- Employ concepts from the EPRI Digital Engineering Guide (DEG)
Barrier #4 – Limited Functionality I&C Devices

- Insufficient guidance on limited functionality I&C devices
Solution #4 - Limited Functionality I&C Devices

- Consider international guidance associated with limited functionality I&C devices
Summary

- Strategy is outcome oriented
- Proposed solutions overcome barriers
- Leverage international successes in DI&C
- Alignment with NRC initiatives and principles