NEI 16-xx
GUIDANCE FOR ASSESSING DIGITAL COMMON CAUSE FAILURE

MEETING BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION STAFF AND THE NUCLEAR ENERGY INSTITUTE TO DISCUSS DIGITAL INSTRUMENTATION AND CONTORL COMMON CAUSE FAILURE

December 1, 2016
(Category 2 Meeting)

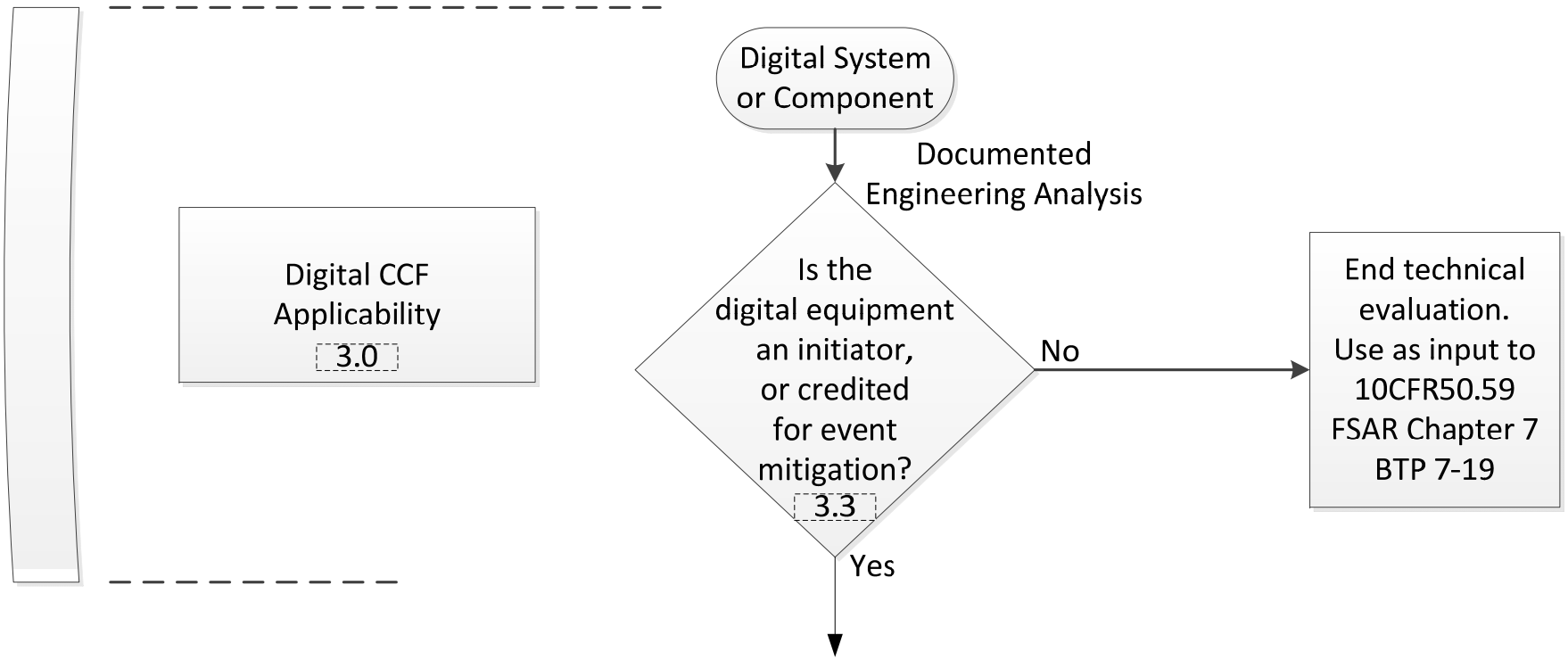
Objectives and Topics to be Discussed

Objective:

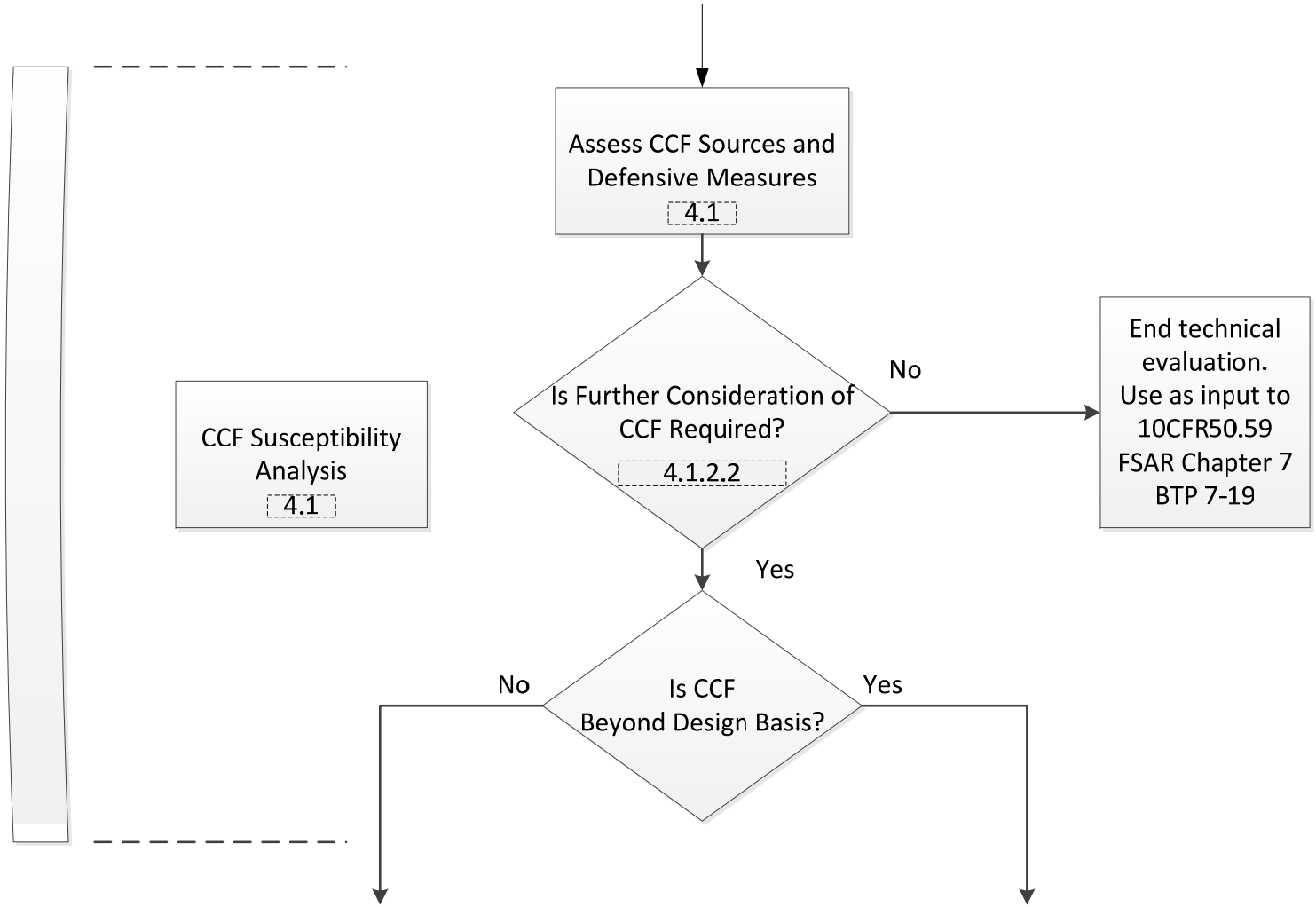
Share industry position on the following areas of the proposed industry Digital Common Cause Failure Guidance document:

- Process Flow Chart
- Scope
- Definitions

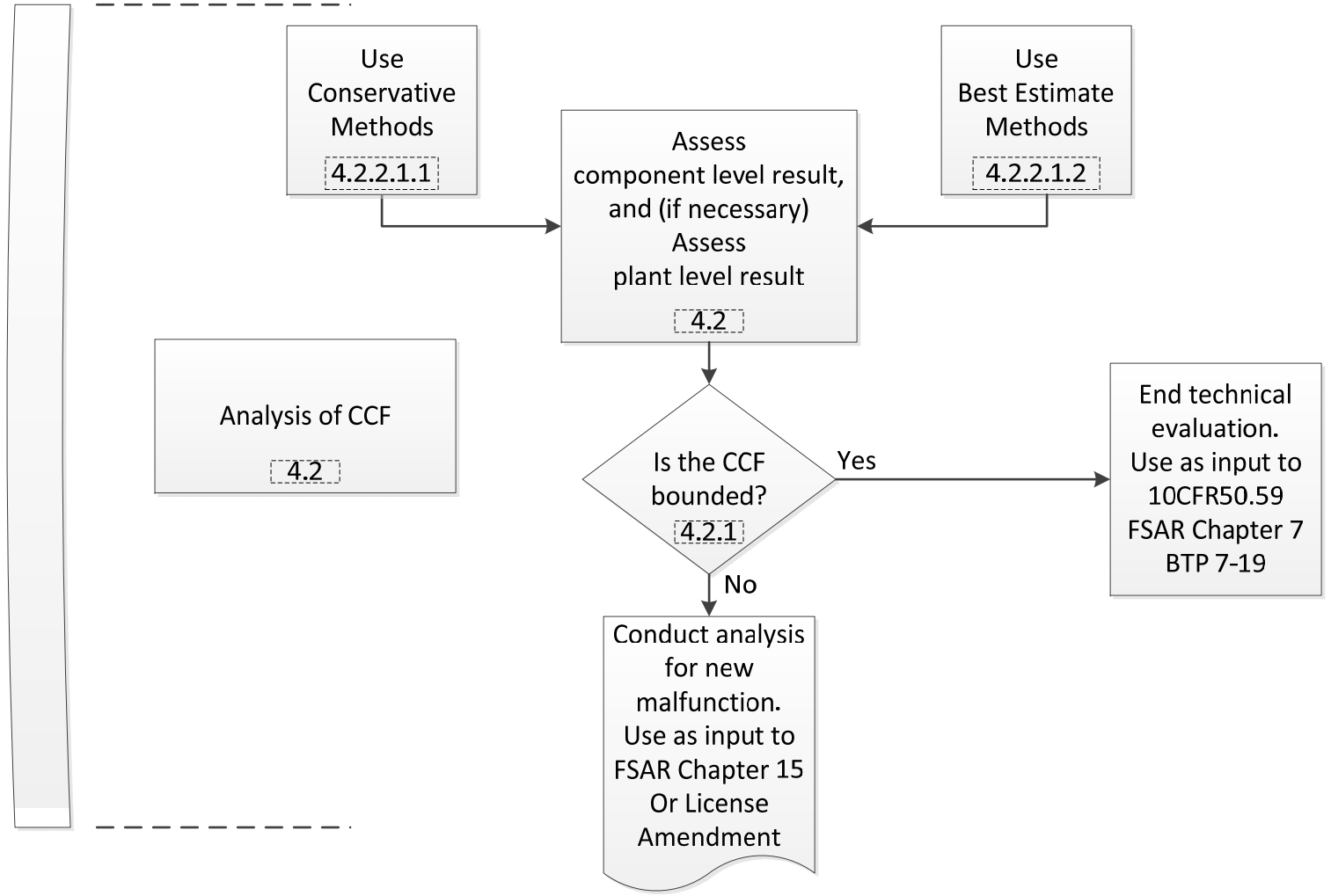
CCF Applicability – Flowchart (1 of 3)



CCF Susceptibility – Flowchart (2 of 3)



Analysis of CCF – Flowchart (3 of 3)



Definitions (1 of 2)

CCF Not Considered

- The likelihood of a CCF caused by an I&C failure source is as low as other CCFs caused by other failure sources that are not considered in deterministic safety analysis. A CCF not considered conclusion means no further consideration of CCF is required, and no further deterministic safety analysis is necessary, since reasonable assurance exists that the CCF is sufficiently unlikely. Otherwise, a deterministic analysis of the CCF malfunction result is necessary.

CCF Beyond Design Basis

- The likelihood of a CCF caused by an I&C failure source is significantly reduced (or less likely) compared to a CCF due to a single random hardware failure. A CCF beyond design basis conclusion is used only to determine the method and acceptance criteria for the analysis of a CCF malfunction result, not to preclude the need for that analysis.

Bounded

- Refers to a potential conclusion from the analysis of a CCF malfunction result. A bounded conclusion means that the plant level results of the CCF malfunction are no worse than the plant level results of other malfunctions that have been previously analyzed in deterministic safety analyses. The conclusion of bounded, or not, can be used as input to the 50.59 or license amendment process.

Definitions (2 of 2)

Preventive (P) Measure

- A set of defensive measures that in aggregate, provide reasonable assurance, that no further consideration of CCF potentially caused by a specific I&C failure source is required.

Limiting (L) Measure

- A set of defensive measures that in aggregate, provide a predictable component level malfunction for a CCF.

Likelihood Reduction (LR) Measure

- A set of defensive measures that in aggregate, reduce the likelihood of a CCF.

Defensive Measures

- Design or design process attributes that can be aggregated together to establish a P, L or LR measure.

Scope for Determining CCF Applicability

If not properly designed CCF is a potential concern for any digital equipment, regardless of that equipment's safety classification, that affects components, systems, or functions described in the FSAR, if:

1. The component, system or function is credited for AOO and PA mitigation, or
2. The component system or function is credited to not complicate that mitigation, or
3. The component, system or function can initiate a plant transient

Questions?