



# DIGITAL SYSTEMS - RELIABILITY ANALYSIS

## Discussion

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# Discussion - challenges / problems

- **Requirements**
  - How the authority/utility requirements for reliability analyses (PSA) are fulfilled in connection of modifications at old units (or building new units)
  - Setting of dependability requirements for I&C systems
    - Definition of reasonable reliability targets, methods etc.
  - Interpretation of the dependability requirements
- **Challenge: Common understanding of the requirements, applicable methods and scope and level of details between all parties (Supplier/Utility/ Authority) for I&C system analysis in PSA**

# Discussion - challenges / problems

- Use of probabilistic methods during design process?
  - often seems hard to implement – seems to be easier to analyze systems afterwards
- Reliability Analyses - Scope and methodology related issues
  - FTA is required by YVL 2.8 - method to justify modeling?
  - FMEA is commonly used - questions
    - scope - level of details?
      - relation to SC - should there be any difference at level of details?
      - requirements in different life-cycle of the unit; design, construction, operation?
      - I&C components (or modules) to be considered?
      - analysis of software failures?
    - failure modes I&C components (modules)?
    - what is necessary input needed to perform the analysis i.e. necessary design documentation
    - treatment analysis of dependencies (support, shared equipment, CCF)
    - documentation of analysis/traceability (coding)

# Discussion - challenges / problems

- **Modeling related (FT)**
  - Data sources for I&C hardware component?
  - CCFs (hardware/software), data
  - Modelling of specific features of I&C
    - self-diagnostic/failure tolerance
    - redundancy within subsystem (e.g. master/slave)

Thank You

