

Nuclear I&C Backfit Projects: Issues and Key Project Risks

Drivers:

The need for the backfit can be either PSA-driven or Obsolescence-driven (or both)

Standards:

There are significant differences between international standards (IEEE vs. IEC) and between national standards. Regulatory expectations may exceed those of the selected standards.

Project management:

Each backfit project consists of at least 3 separate projects, each of which is critical to overall success

Project stakeholders:

1. Licensee – operators, designers, maintenance, safety case
2. Vendor
3. Supply chain (re licensing issues)
4. IV&V vendor
5. Regulator

Contract issues include:

1. The parties should try very hard to ensure a spirit of cooperation
2. There should be a complete specification for the old system before the main contract is signed.
3. Specification and design work for the new system can be fixed-price, but implementation must be T&M

Project 1:

Fully specify old (extant) system

Prime responsibility: Licensee or NPP vendor

Key project risk areas:

1. Documentation shortfalls – e.g. lack of knowledge of functional requirements
2. Existing reliability claims are found to be no longer supportable e.g. due to separation issues or seismic issues requiring additional engineering work, or else (say) 'SIL 3' safety claims buried in 'SIL 1' equipment. This may need additional analysis and/or changes to the scope of work for the new system.
3. Inadequate resourcing by Licensee – this may be wrongly perceived to be the 'easy part'.

Project 2:

Fully specify and design new system

Prime responsibility: I&C Vendor

Key project risk areas:

1. Lack of clarity or inconsistency from client regarding system requirements.
2. Failure of proposed equipment to meet SIL requirements from client.
3. Unrecognised space constraints preventing separation requirements being realised, or for installation of new cubicles, etc.
4. Clear agreement on the choice of standards between licensee, vendor and regulator

Project 3:

Migration planning and implementation

Joint responsibility Licensee & I&C Vendor

Key project risk areas:

1. Operational access constraints.
2. Limited duration windows for work execution.
3. Space constraints.
4. Old cabling is found to be not re-usable.
5. Late emergence of issues from Projects 1 and 2, leading to re-work