The Certification Process for the Year 2000

Ontario Hydro Nuclear
Year 2000 Project

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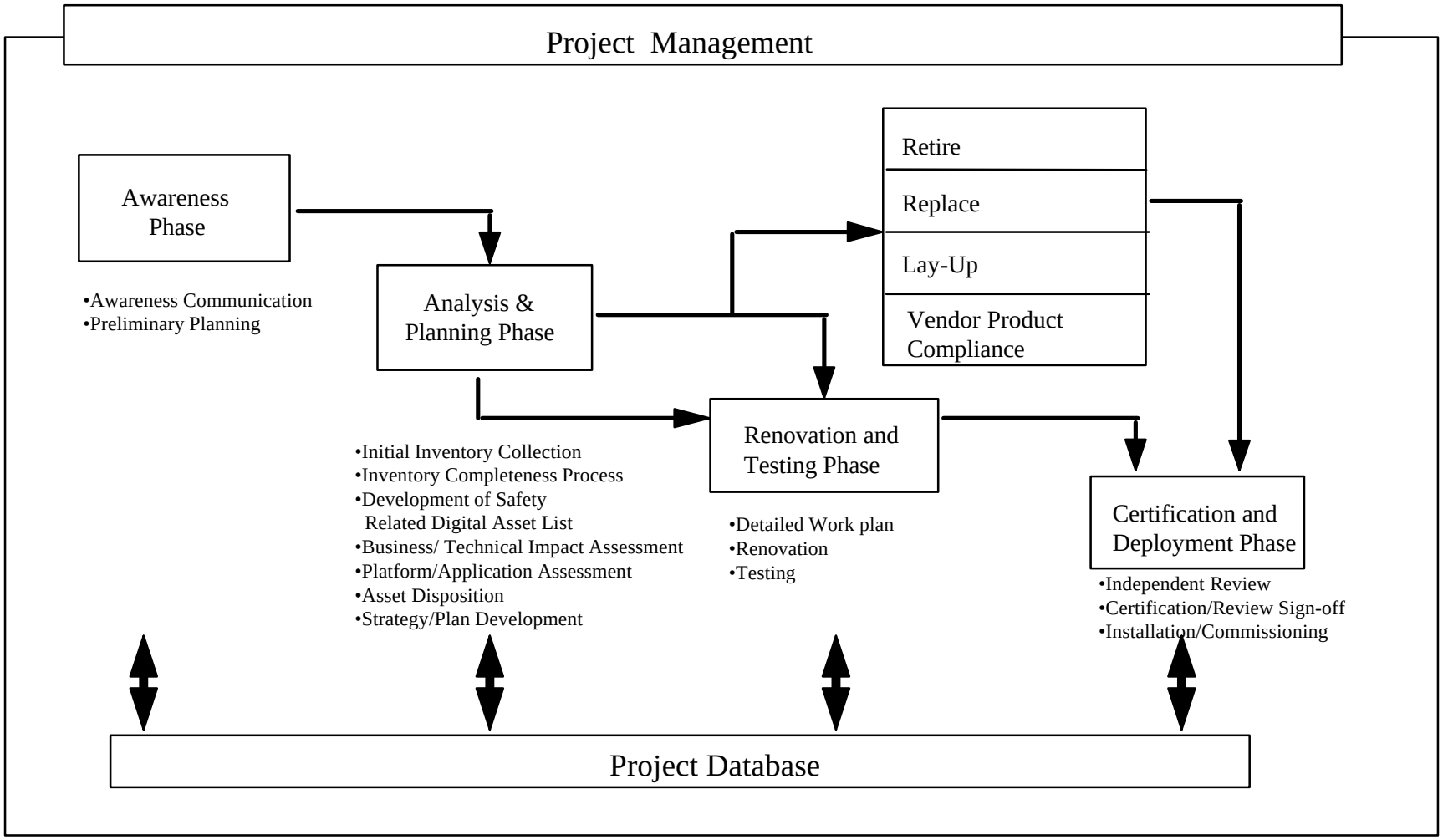
Objectives of Presentation

- Briefly describe overall Y2K certification process
- Discuss processes required for certification of nuclear safety related digital assets

Y2K Certification Process

- Certification process designed to provide assurance that:
  - digital assets deemed compliant, are compliant, and
  - for those that are non-compliant, the residual risks are identified, documented, and are acceptable to the asset owner.

OHN Y2K Process Flow



Business Impact Assessment

- Every asset is categorized according to its Business Impact
- This determines the rigour of the process to be followed

	Business Impact Rating		
Impact Factor	**High (incl. Safety)**	**Med**	**Low**
Safety	Risk of Injury/Death	Not Significant Risk	No Risk
Stakeholders	Major	Limited	None
Financial Impact	$ Millions	$ 100K+	$ 10K+
Core Product Delivery	Significant Disruption	Limited	Normal Tolerance
Environment	Impact Leading to Investigation	Not Significant	None

Safety Related Asset Categories

- Special Safety System (SSS)
- Failure Could Challenge SSS
- Other Safety Related

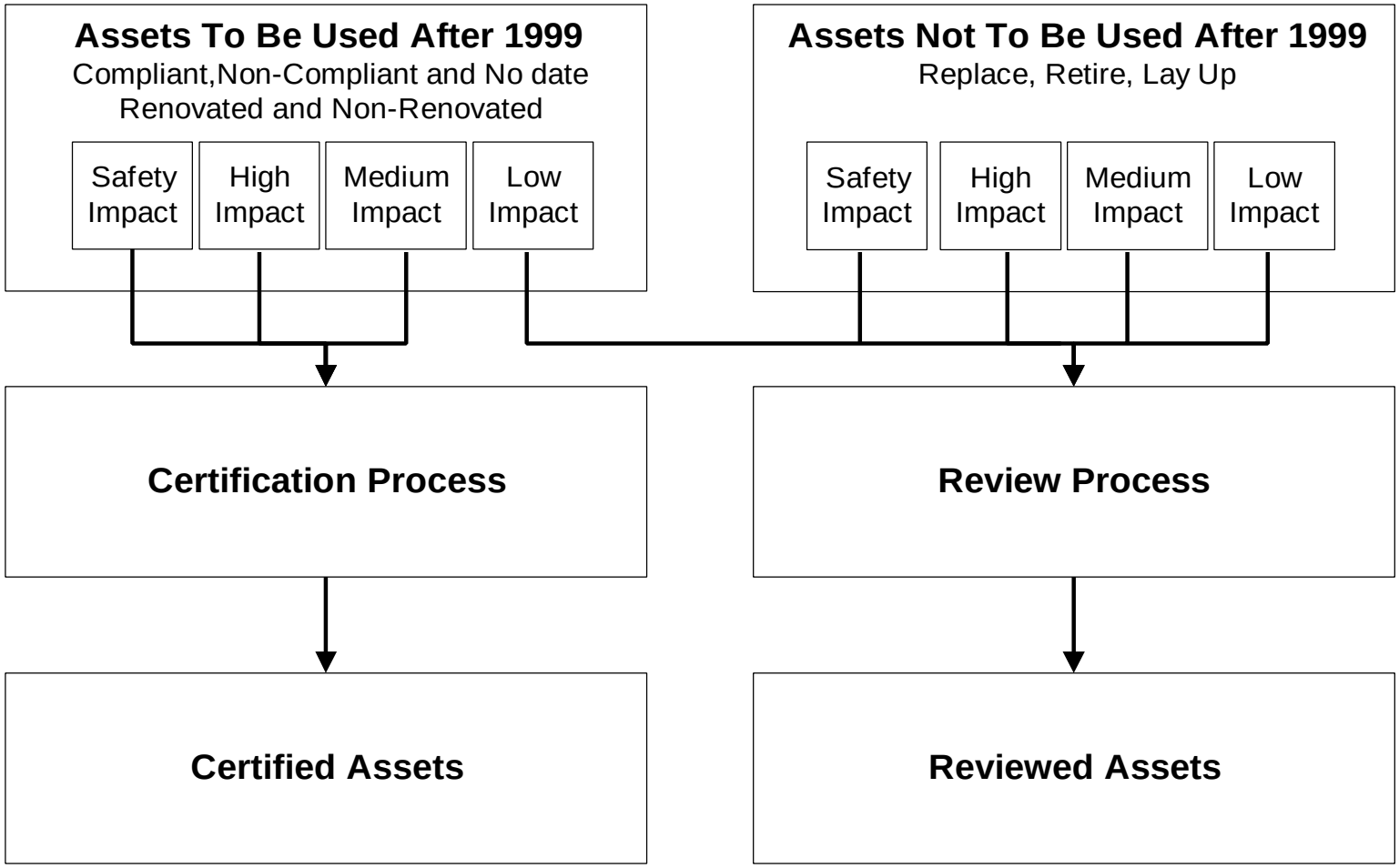
Compliance Assessment and Impact Analysis

- Y2K Compliance and Impact Assessment
  - Technical information recorded for the assets identified in the Inventory Process
  - Compliance assessments performed to establish Compliance status and determine required action
    - Technical Impact Assessment (TIA) for High & Medium assets
    - Platform & Application Assessments for Safety Related assets
- Compliance Categories:
  - No Date Capability
  - BSI Compliant
  - Compliant (life of asset + 20 years)
  - Non-Compliant

Compliance Assessment and Impact Analysis (cont.)

- Dispositions
  - Replace
  - Renovate
  - Admin. Procedure
  - Retire
  - Lay-up
  - Quarantine
  - No action required

Asset Certification and Review



Safety Related Process

- Flow Summary
  - Non-compliance of the asset identified in Platform/Application Assessment
  - Disposition established based on details of specific Y2K problems
  - PEP developed
  - Renovation performed
  - Station Change, Testing and Configuration Management Processes Applied

Safety Related Process (cont.)

- Flow Summary (cont.)
  - Y2K Test Plan and Test Cases developed (according to requirements and templates), then executed
  - Site sign-off on Certification
  - Independent Review
  - OHN Certification sign-off

Platform/Application Assessment

- Guidelines and Report Templates to ensure consistency
- Code Review Design Notes to assist in approaching the code assessment
- Platform Assessment deals with the hardware, operating system and software tools used to develop the application
- Application Assessment deals with the software application
- Investigates and documents in detail the compliance of the system and provides an auditable process of the methods used
- Explores alternatives for dealing with non-compliance

Renovation Process

- Assessments (Platform and Application) identify non-compliance of the asset.
- Asset Owner develops a Project Execution Plan (PEP) for dealing with non-compliant assets.
- Both Y2K Project Standards and Station's Normal Engineering Change Procedures combine to ensure change process is effective:
  - Normal Unit, Integration and Regression Testing are Performed
  - Normal Installation and Commissioning Workplan Developed

Y2K Testing

- Test Documentation forms an essential part of the Certification package.
- Testing Requirements Document specifies testing and test documentation requirements
- In general, an Asset's Business Impact will dictate:
  - whether Independent Testing/Review is required, and
  - the extent of Testing Documentation Required for Certification/Review
- Safety Related Assets require rigorous, independent testing, comprehensive documentation and independent review

Testing Requirements for Renovated Safety Related Assets

- Station-approved process to be followed for testing following software changes.
- Y2K Testing:
  - to cover all major systems functions, and
  - to cover all software Interfaces to Modules that have been modified

Testing Requirements for Renovated Safety Related Assets (cont.)

- Test Plan, Test Case and Procedures, Test Report produced by an individual independent of the Designer/Developer of the Y2K changes
- These documents require supervisory review
- Generally require approval of the Asset Owner
- Tester to be independent of the Designer/Developer of the Y2K changes

Independent Review

- To provide the Y2K Project Manager confidence that:
  - Assets can be OHN certified
  - Asset documentation provides an auditable trail
    - conclusions are documented
    - process for reaching conclusions is evident
    - method used is clear
  - Work is technically sound

Independent Review (cont.)

- Covers all aspects of Safety Related Digital Asset certification.
- Includes documentation, process and technical evaluation.
- Templates provided to give guidance, and promote consistency
- Reviewers to work in parallel with the site team

Independent Review (cont.)

- For due diligence purposes documents are required to be:
  - Complete
  - Consistent/Traceable
  - Correct
  - Correctly Filed and Controlled

Documents Reviewed

- Platform and Application Assessment
- Work plans
- Renovation work documents
- Testing Documents
- Site Certification Documents

Certification Sign-off

- Completes the asset certification process
- Independent Reviewer makes recommendation for Certification
- Package Reviewed by Licensing Engineer who makes recommendation for sign-off by the Y2K Project Manager