Assessment of the Capabilities of NDE Inspection Systems

Daniel Algernon

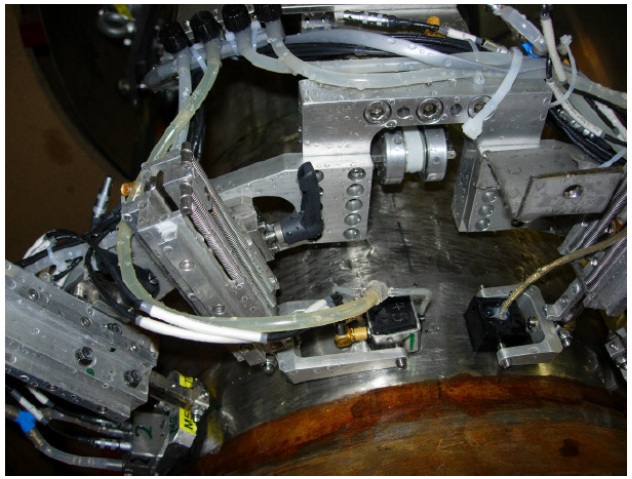
SVTI – Swiss Association for Technical Inspections
Nuclear Inspectorate
NDT Laboratory & Qualification Body

Qualification of INSPECTION SYSTEMS

SVTI ASIT

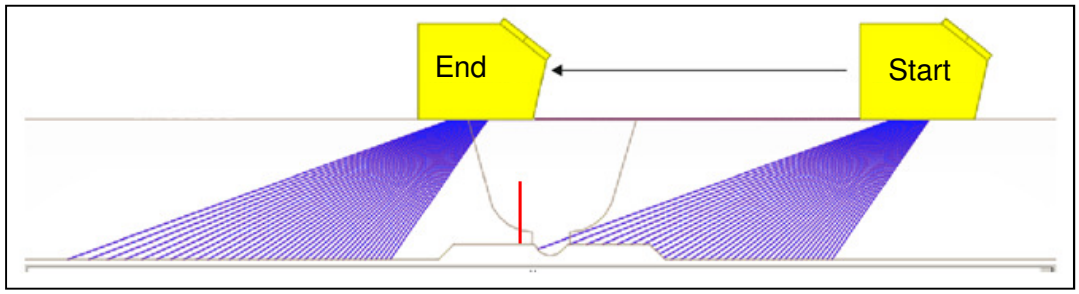
- Inspection System = 3 elements

Equipment



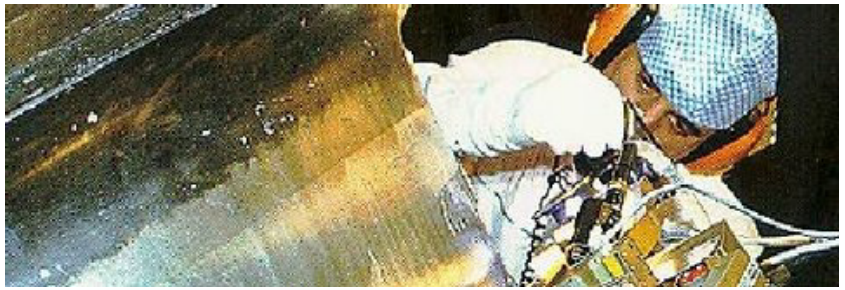
Personnel (who?)

Procedure (how?)



Regular "Nuclear" Qualification Procedures for NDT inspection of mechanical components

- **Qualification of the Inspection Procedure**
  - *Technical Justification*
  - *Open test pieces*
    - Geometry, Surface Condition, accessibility
    - All relevant flaws have to detected (and sized if applicable)



- **Approval to the Inspection Procedure by Qualification Body**
- **Qualification of Inspection Personnel**
  - *Mandatory: Passed General Training, hold valid certificate*
  - *Blind Test, must find at least 80% of the flaws*

⇨ **Reliability** → **Adaption to Concrete Applications, Simplification**

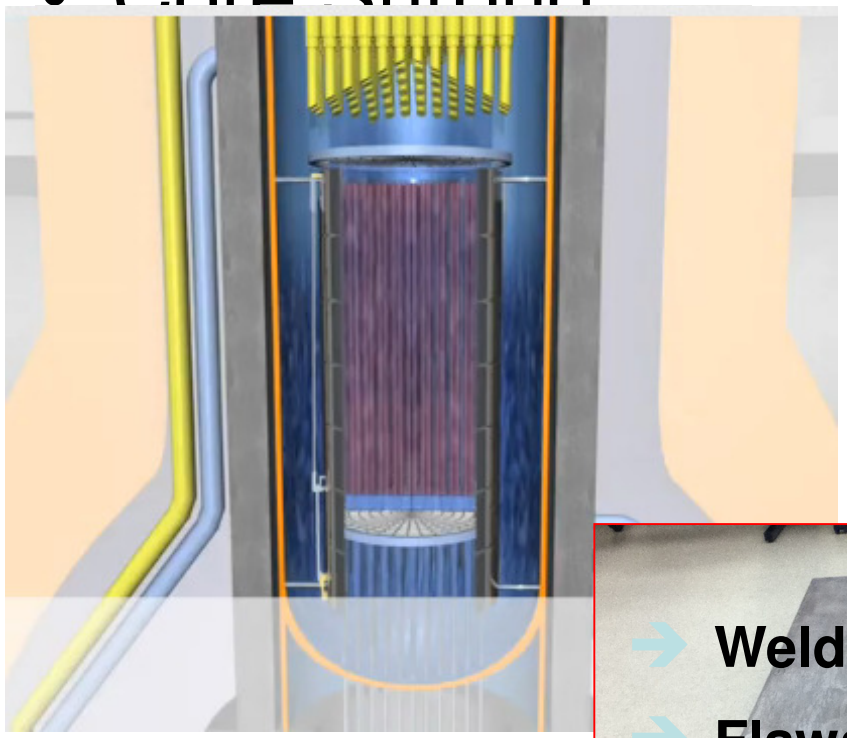
Practical Demonstration

- Assessment and simulation of the general conditions for the inspection
- Assessment and simulation of relevant flaws (qualification target)
- Mockups/Test blocks

Test Blocks and Mockups, Example: Core Shroud

(UT inspection)

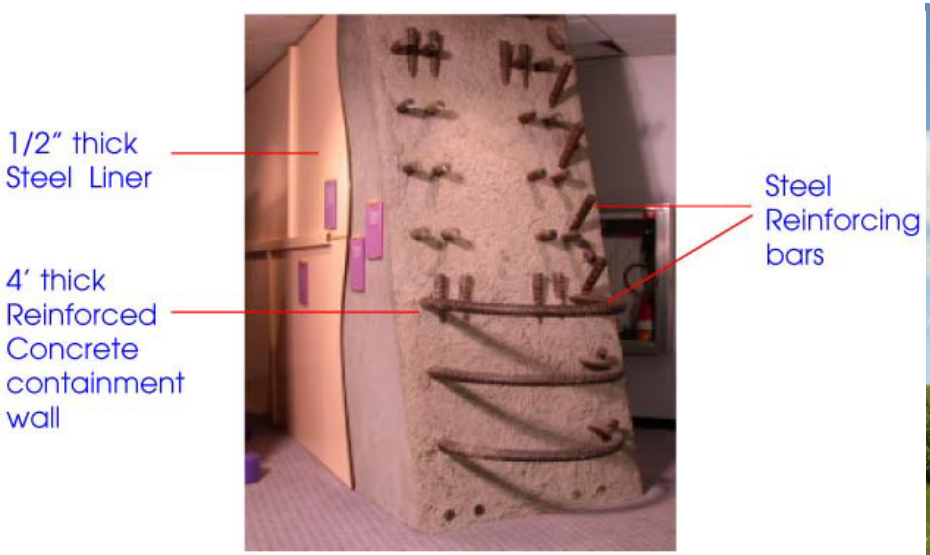
- Core Shroud



➔ Test Block

➔ Full-Scale Mockup

Structural Concrete at Nuclear Power Plants

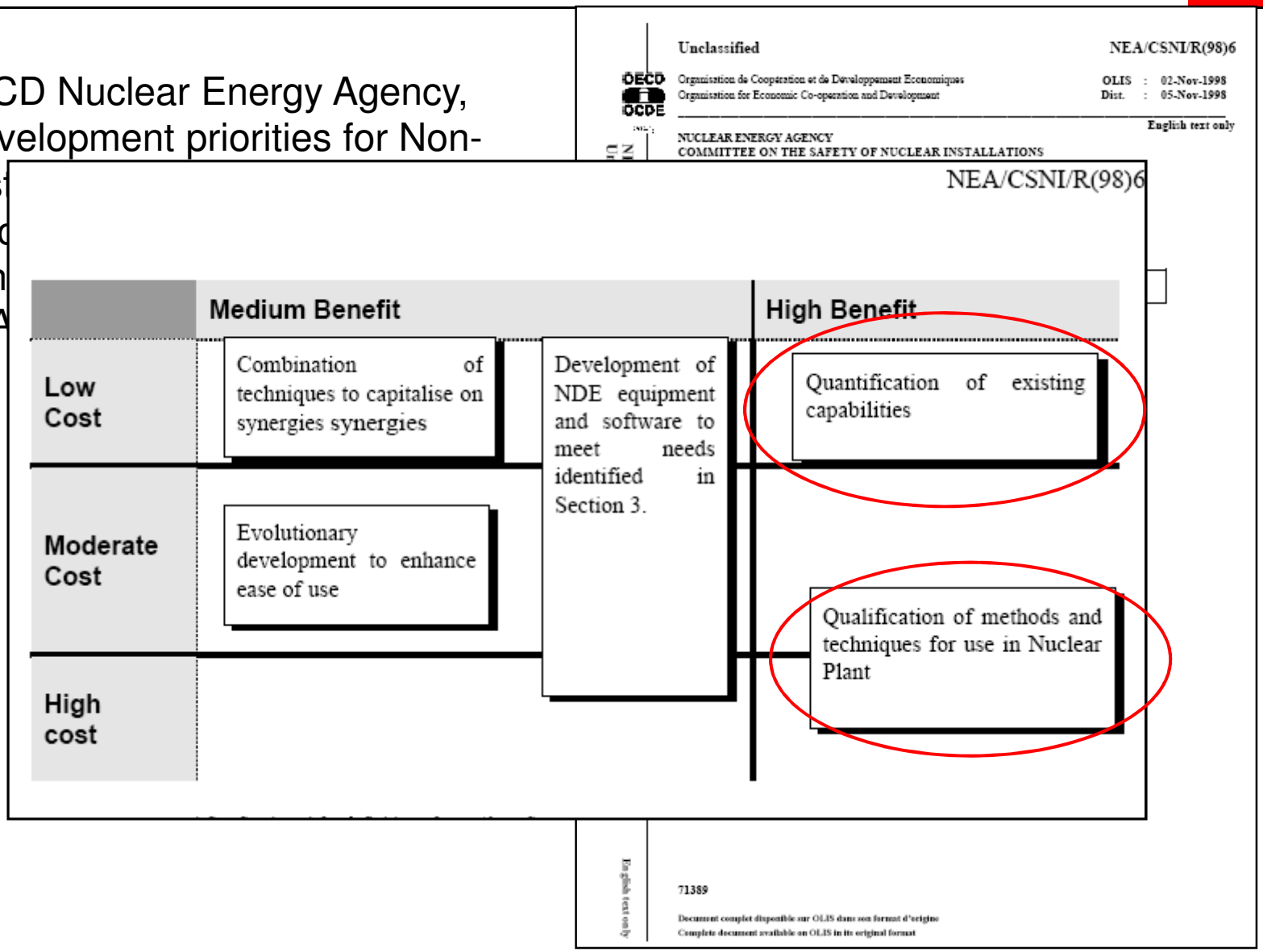


Construction of Containment Wall

Plant Life Extension (PLEX) makes assessment of concrete components essential

Needs for Application of Concrete Related NDE in the Nuclear Field

OECD Nuclear Energy Agency, "Development priorities for Non-Dest
of co
plan
NEA



Unclassified NEA/CSNI/R(98)6

Organisation de Coopération et de Développement Economiques
Organisation for Economic Co-operation and Development

OLIS : 02-Nov-1998
Dist. : 05-Nov-1998

English text only

NUCLEAR ENERGY AGENCY
COMMITTEE ON THE SAFETY OF NUCLEAR INSTALLATIONS

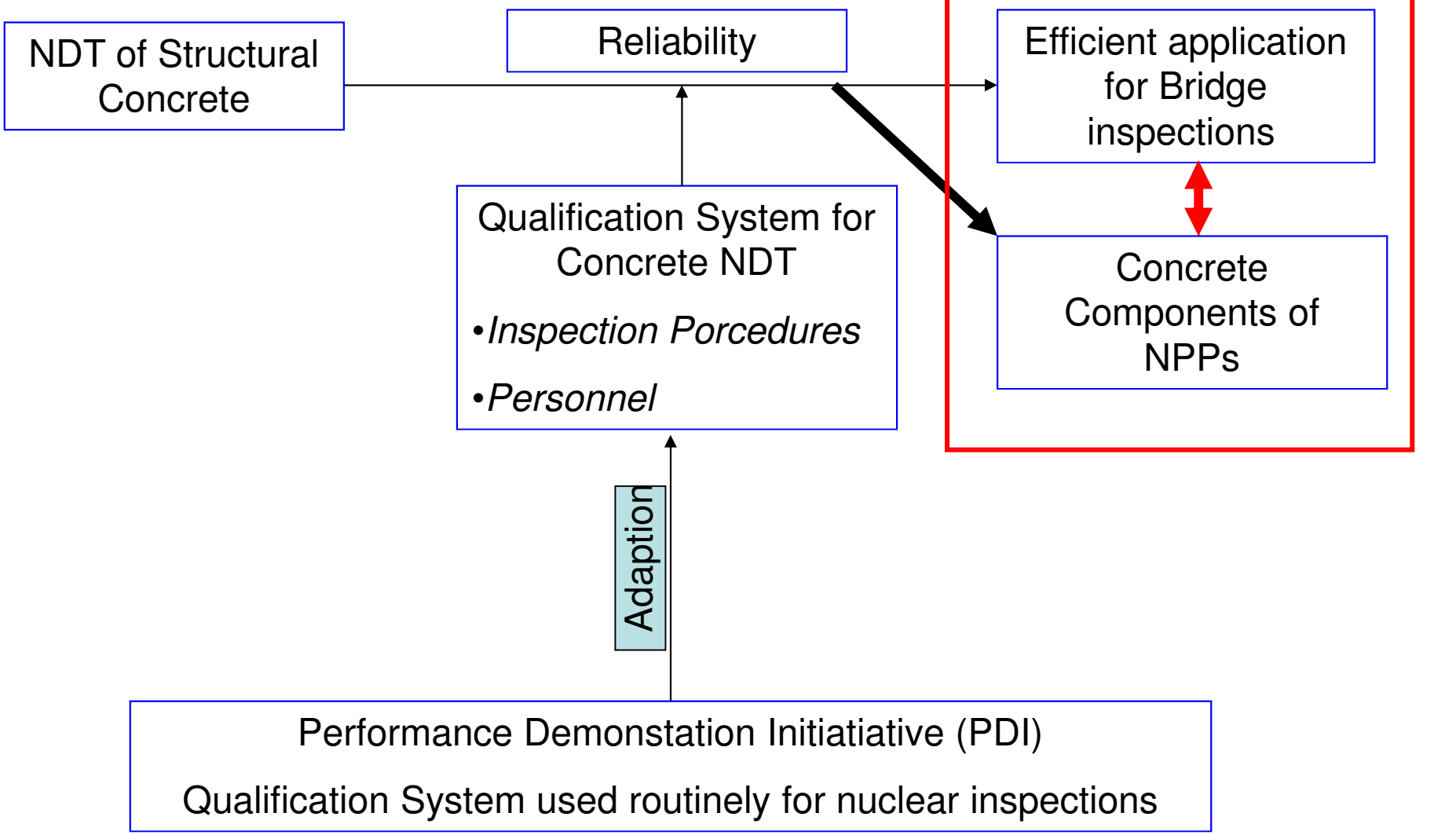
NEA/CSNI/R(98)6

	Medium Benefit		High Benefit
Low Cost	Combination of techniques to capitalise on synergies synergies	Development of NDE equipment and software to meet needs identified in Section 3.	Quantification of existing capabilities
Moderate Cost	Evolutionary development to enhance ease of use		Qualification of methods and techniques for use in Nuclear Plant
High cost			

71389

Document complet disponible sur OLIS dans son format d'origine
Complete document available on OLIS in its original format

Quantification of Reliability
Bridge testing goes nuclear… and vice versa



Conclusion

- Qualification = Reliability
- Lower risk for client, inspections become more attractive
- Successful application will improve acceptance of NDT even more
- Concrete inspections at NPP need input from bridge testing experts
- For inspections of NPPs reliability is essential
- Benefit for bridge testing community
- Next Step: Pilot Project

Contact: daniel.algernon@svti.ch

Thank you