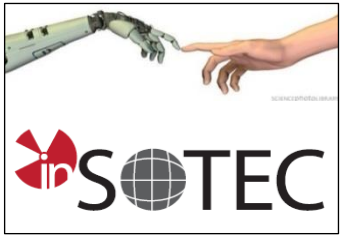
Öko-Institut e.V.
Institut für angewandte Ökologie
Institute for Applied Ecology

Demonstrating Safety – Lessons Learnt by InSOTEC



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OECD-NEA Symposium “The Safety Case for Deep Geological Disposal of Radioactive Waste: 2013 State of the Art”

Paris, October 7 - 9, 2013

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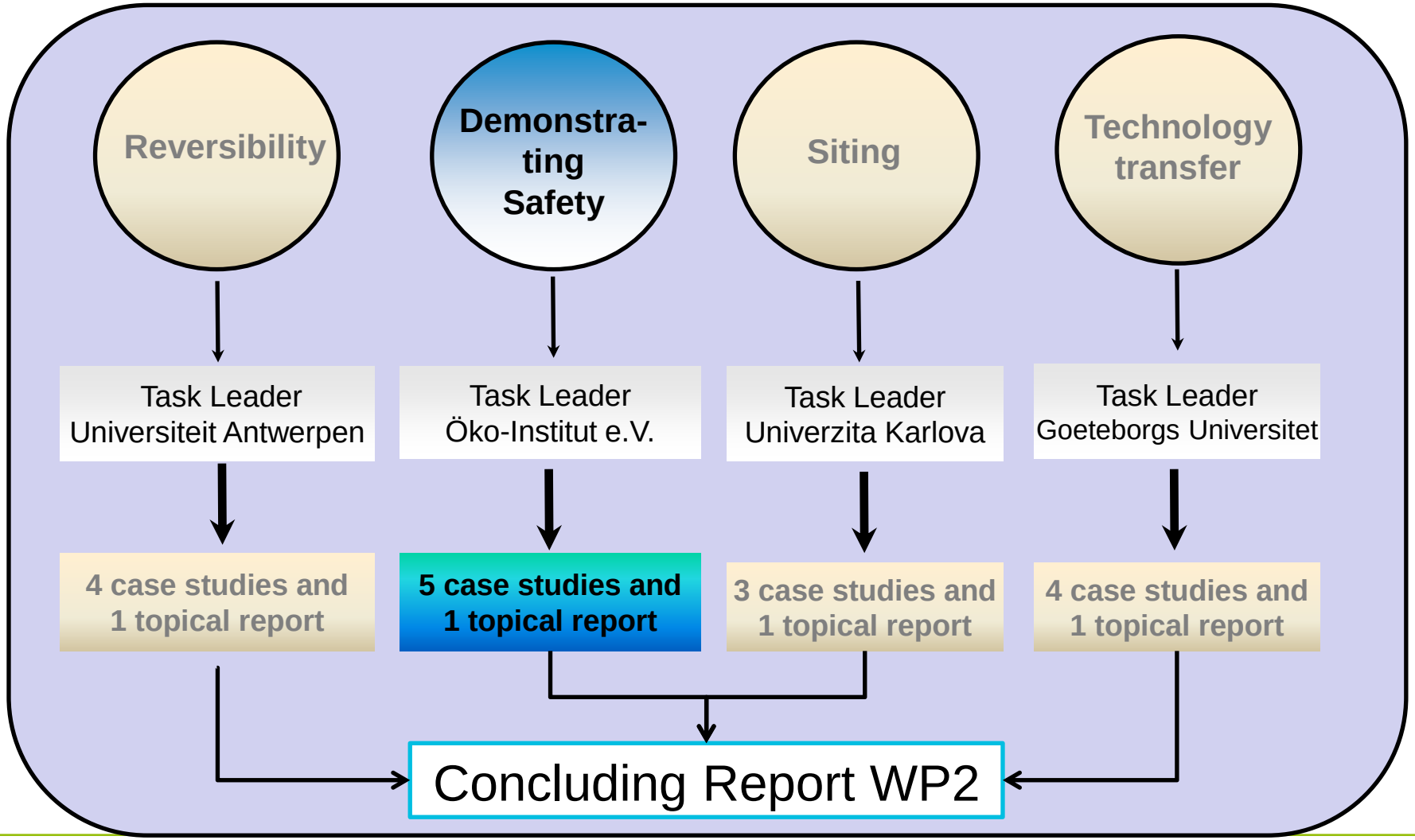
1. Introduction

The InSOTEC project

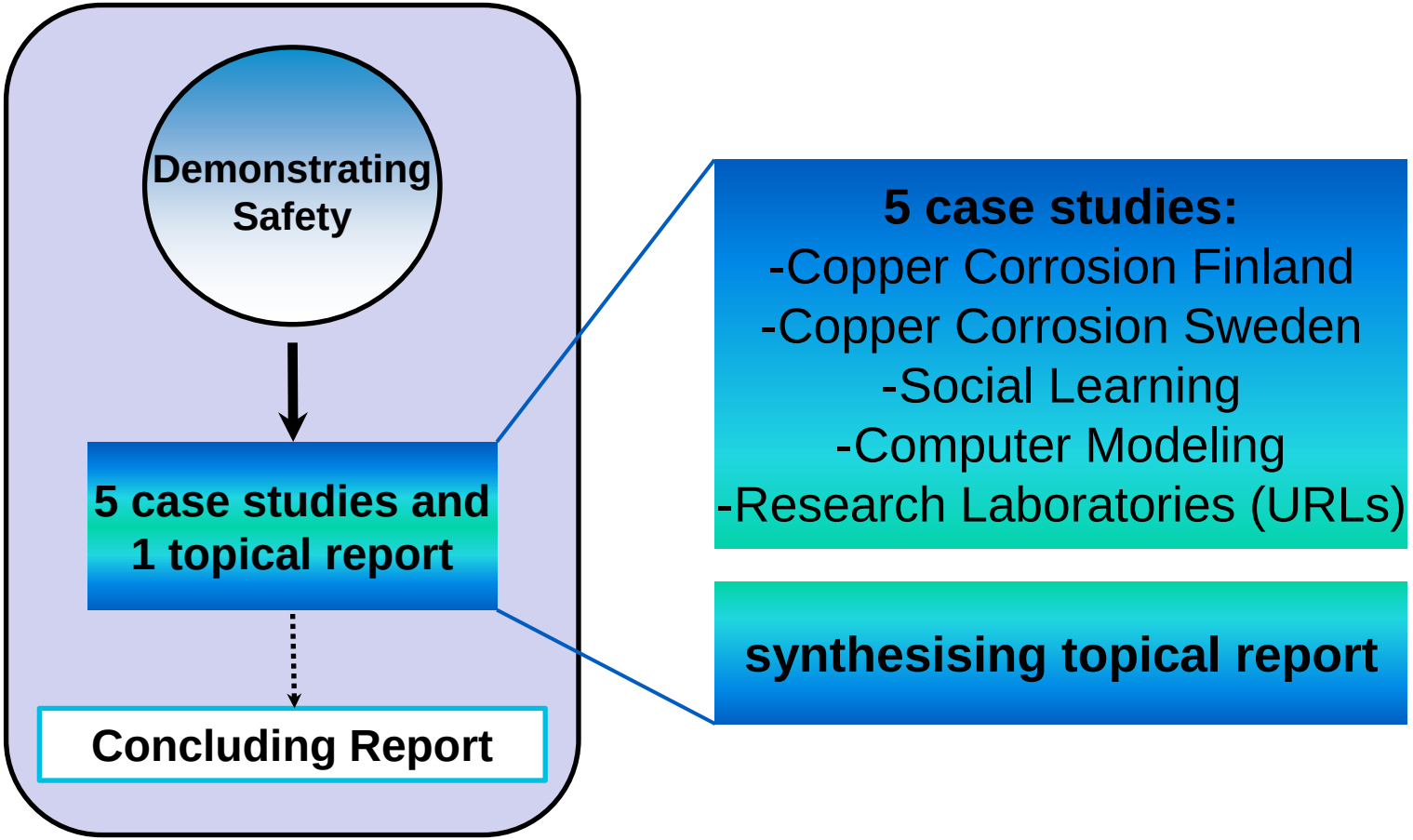
- InSOTEC is a 3 years FP7 EURATOM project
- InSOTEC is drawing on work in the social studies of science and technology ➔ it starts from the proposition that social and technical processes are inextricably bound together
- Radioactive waste management is therefore a combined social and technical activity
- InSOTEC focusses on making explicit this interplay by tracing associated processes, involved actors, modifications to earlier solutions
- "Demonstrating Safety" = 1 of 4 exemplary topics for in-depth analysis of socio-technical (S-T) combinations

2. Demonstrating Safety – an issue for S-T analysis



2. Demonstrating Safety – an issue for S-T analysis

- Structure of research activities on Demonstrating Safety



2. Demonstrating Safety – an issue for S-T analysis

Current developments on how to approach analysis from a socio-technical view point (Work in Progress!)

- Tracing **Modifications** of technical solutions / processes / methods
  - the occurrences by which they are triggered
  - the processes by which they are facilitated or accompanied
  - the actors / actors' networks involved
- Evaluating **awareness rising factors** of the socio-technical dimension
  - behaviour of certain actors in controversial discussions
  - changes in public interests
  - milestones
  - …
- Applying the methodological approach of **"Problematisation"**
  - the general formulation of: a problem, the ways to address it and the identification of most legitimate actors for doing so
  - acknowledging dynamics and instability

3. Potential implications for the Safety Case – The understanding of Safety

- „Safety is the fundamental concept in societal decision making“ [Möller: Safety and Decision-Making, Stockholm 2006]
  - ➔ Solutions for complex projects have to face **developments** in

societal	**values**
political	**objectives**
technical	**habits**

- Safety is multidimensional: Comprises the severity of potential damage/harm, the probability, uncertainties
- Safety is relative:
  - ➔ Broadly agreed reference levels necessary (which may change over time – see above): safety criteria, evaluation standards (e.g. above agreed levels, best possible safety above agreed levels)

➔ **Well understood and agreed Safety Concept = basis for the Safety Case**

3. Potential implications for the Safety Case – How to show safety

- The Safety Case is a tool to show ("demonstrate") that the planned facility fulfils the safety reference levels
- Long-lasting timescales and concept of passive safety cause special challenges and require new approaches:
  - A collection of arguments developed with different methods
  - Stepwise development
  - …

➔ **Early agreements necessary:**

- Which arguments and methods are relevant, necessary and sensible, e.g. what is the role of natural analogues?
- How to design the stepwise process (who, when and what)
- What are the issues that have to be treated and to which detail in the different steps of a stepwise approach – what is technically possible, what is necessary or desirable from different viewpoints

3. Potential implications for the Safety Case – Concluding remarks

- A socio-technical approach can support
  - broad interdisciplinary discussions
  - bringing all arguments and viewpoints on the table
  - the development of processes for discourse and modification

  ➔ **It contributes …**
    - **to the development of basic principles of a Safety Case**
    - **to making the SC a strong tool in decision making**

Challenges:

- Common “language” and mutual learning
- Flexibility of technical concepts – technical democracy
- The implementation of suitable processes
- Finding a balance between open discourse – binding solutions

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