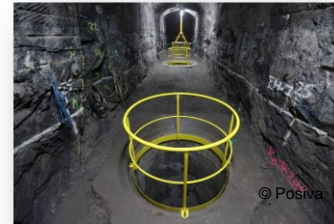
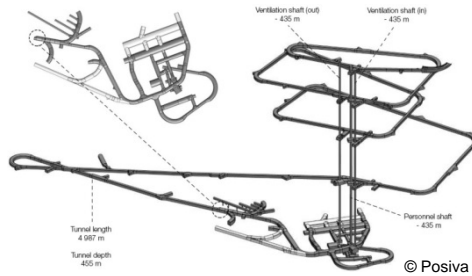
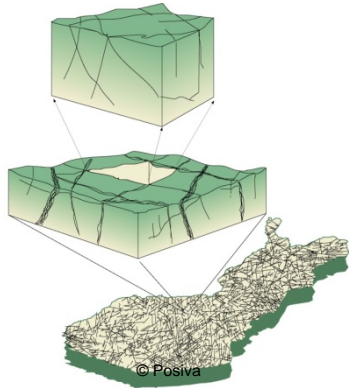


# How to ensure regulator readiness for license application review?

IAEA GC, Senior Regulator's meeting

Jussi Heinonen

# 40 years' of development and oversight



Test operation,  
commissioning

Application for the  
operating license

2016- 2023



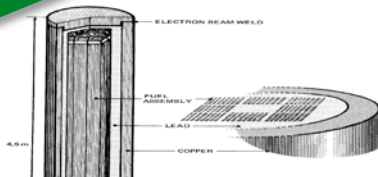
Construction  
license

2001 - 2015



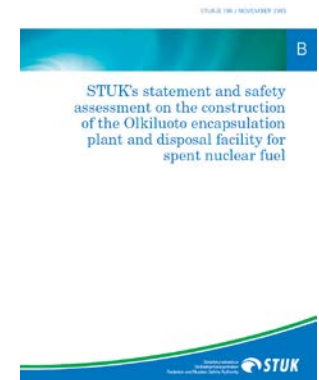
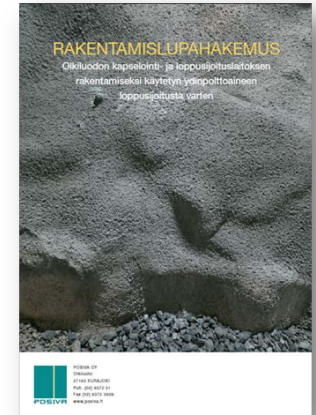
Decision-in-  
Principle

Late 1970' - 2000



# Conclusions of Posiva's construction license application

- **The Government has granted Posiva a construction license 12<sup>th</sup> November 2015**
- STUK gave statement and safety assessment report to Ministry of Employment and Economy 11<sup>th</sup> February 2015
- STUK's main conclusion: **Encapsulation plant and disposal facility can be built to be safe**
- STUK emphasized in its statement to the Government that:
  - Level of safety and facility design is satisfactory for the construction license stage
  - Further work needed in facility detailed design, demonstration of disposal system performance and preparation of a comprehensive safety case for Operating license application
- Translations are also available in English and Swedish at STUK website (<http://www.stuk.fi/web/en/topics/nuclear-facility-projects/the-encapsulation-and-final-disposal-facility-of-spent-nuclear-fuel>)



# How to ensure readiness?

## Criteria for decision making

- Up-to-date safety requirements
- What is enough in this licensing step?

## Review strategy

- What is relevant in this licensing step?
- How to address (top-down or bottom-up review, own analysis, inspection)?

## Expertise

- Strategy for developing regulatory competences and resources
- Adapted to licensing step in question

## Interaction with applicant

- important for mutual understanding
- Address main safety questions during pre-licensing – no surprises!

# Examples of STUK preparatory work for Posiva's construction license application (CLA) review

# STUK's activities prior to license application

- After Decision-in-Principle STUK reviewed
  - step-wise developed safety case parts prepared by Posiva
  - Draft construction license documentation submitted in 2009
  - R&D-plans submitted every three years
- Oversight of Onkalo underground rock characterization facility construction
- Update of safety regulations (YVL guide) before CLA review
- Continuous dialogue between STUK and Posiva

	2009	2010	2011	2012
<b>Description of the Disposal System report</b>				
Final version				
<b>Process report*</b>				
Final version				
<b>Formulation of Scenarios report</b>				
Final version				
<b>Models and Data report</b>				
First version				
Final version				
<b>Analysis of scenarios report**</b>				
First version				
Final version				
<b>Complementary Considerations report*</b>				
Final version				
<b>Summary report</b>				
First version				
Final version				

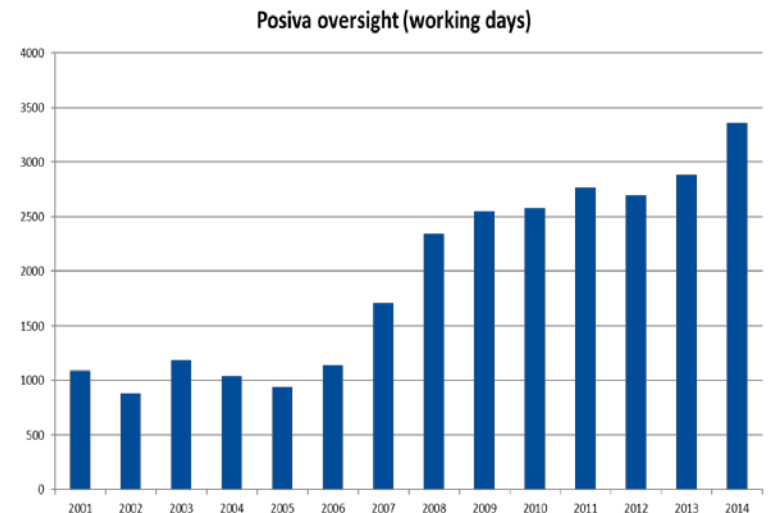
\* First version of the report has already been published

\*\* KBS-3V Safety Analysis report (Nykyri et al. 2008) has been published in 2009 and the Biosphere Analysis report will be published in 2009.



# Strengthening STUK's competence

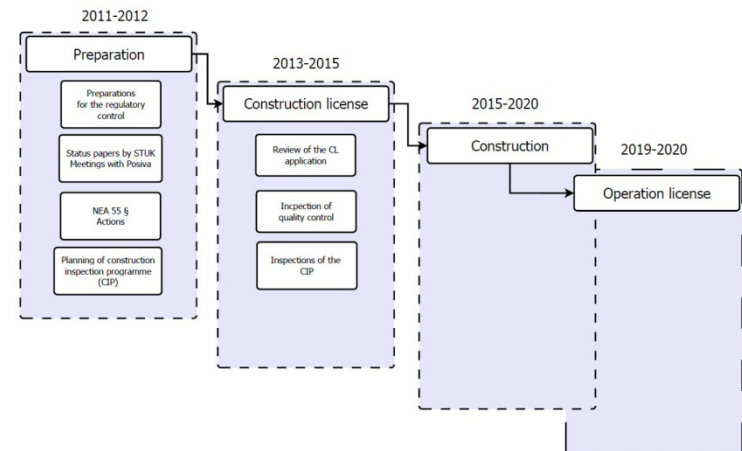
- STUK started year 2006 to further develop its own resources and broaden the expertise
  - Assessment of knowledge gaps and estimate of resources needed
  - **Decision to have key expertise in-house,** but realizing the need to use also external resources
- Committing and educating STUK's own NPP experts for review of Posiva's facility system design and operational safety
- Planning and executing of procurement program for ensuring the use of interdependent outside experts
- International peer reviews for regulatory effectiveness (EU27 and IRRS)





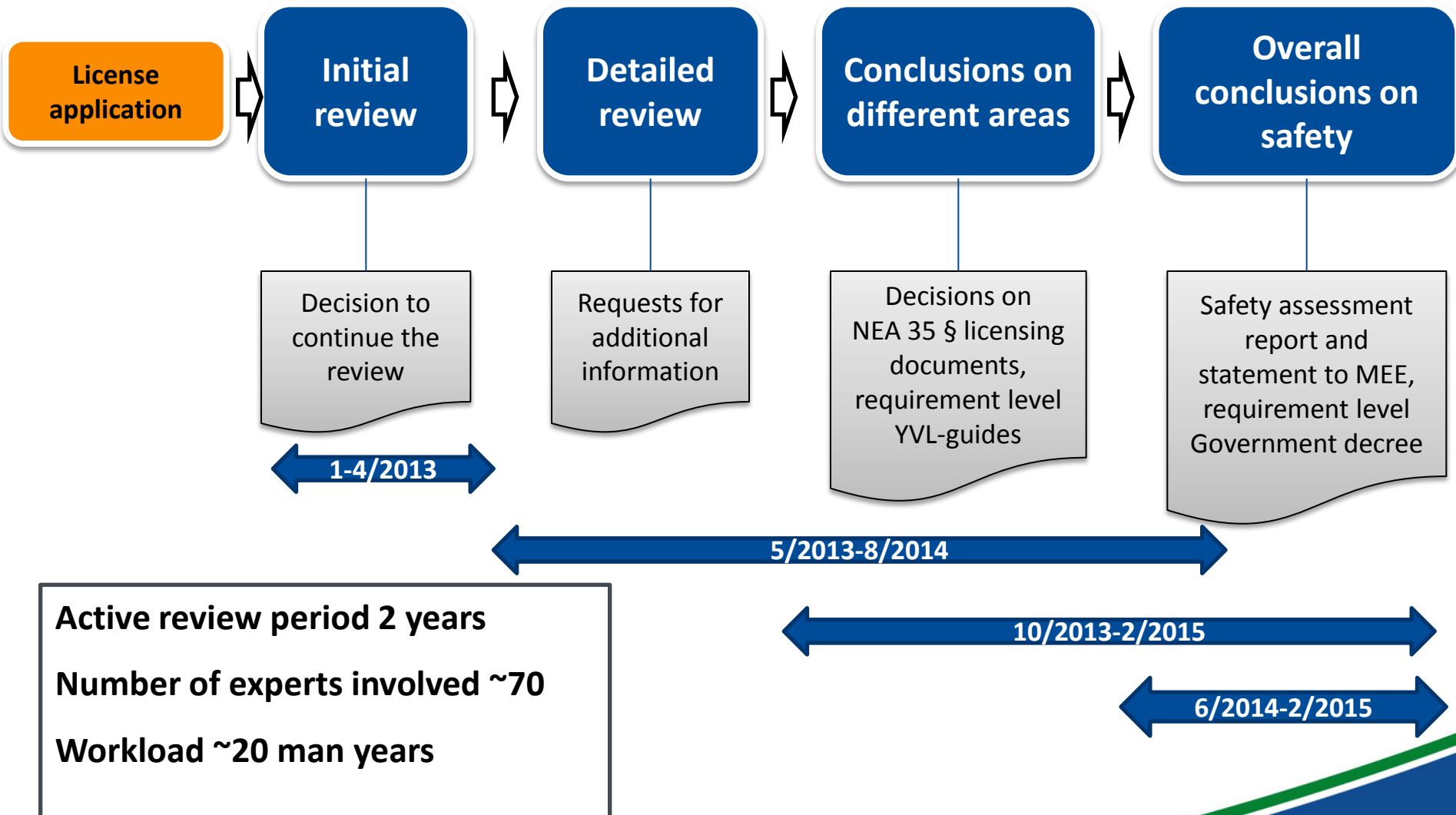
# Planning for the construction license application review

- The main tasks during 2010-2012 were to
  - Prepare the **Review plan**, which compiles regulatory requirements and safety concerns
  - Prepare a **Project plan**, describing review process and organisation
  - Plan a **inspection programme** for review phase
  - Describe internal policy on identified **key safety concerns** in STUK position papers
  - Develop and implement regulatory **safety analysis capabilities**
  - Plan, go through procurement and contract **external resources**





# STUK's review stages and time schedule



# Lessons learnt from the pre-license phase

- Active regulatory participation is important for successful licensing
  - Preliminary review in pre-license phase
  - Step-wise development of regulatory requirements
- Rehearsal of licensing
  - In Posiva's case pre-license application was important for STUK and Posiva to have more concrete idea what the actual license application contains.
  - For STUK it also helped in organizations of the actual review
- Regulator should have already beforehand idea how-much-is-enough
  - This has been the most difficult part in licensing of a new type of facility. We developed different types of issues lists and traffic light classifications when trying to grasp what is really needed to be ready in construction license.
- Competences
  - Orientation to regulatory work takes time and increase of staff should start early enough
  - Now after CLA review STUK's experts have clearly better understanding of disposal and safety

# Can international community help regulators to get prepared?

- Should we have more discussion or guidance about licensing step and how much is enough?
- Deep geological repositories are unique and often first-of-a-kind facilities, but should we anyway
  - Try to adapt more on safety requirements and regulation of other nuclear facilities?
  - Should we try to learn more from other industrial areas?
- Independence of the regulator – quite often debated
  - how close interaction with the license applicant and on which topics?
  - Line between good understanding and taking responsibility?