

Forgetting the nuclear waste repository for good as the Finnish approach?

Olkiluoto anno 3022

Dr. Petri Paju, SYP, Helsinki 2022

Topic

- **Knowledge and memory preservation** especially for the post-closure phase of final disposal.
- Studied recently by Nuclear Energy Agency's project on Records, Knowledge and Memory (RK&M)
- Finland's leading role in final disposal but hardly there in those RK&M results
- A different approach to post-closure memory issues?

Project *Final disposal of spent nuclear fuel and societal memory*

- Main questions:
 - To find out how have the Finnish actors prepared for the preservation of information and knowledge about the final disposal system, previously and now.
 - To map what kind of solutions for this (have been and) are being developed elsewhere.
- The purpose is to better ensure that knowledge and memory of the final disposal facility is preserved for future generations.
- Included in the Finnish research programme on nuclear waste management (KYT) during 2021–2022

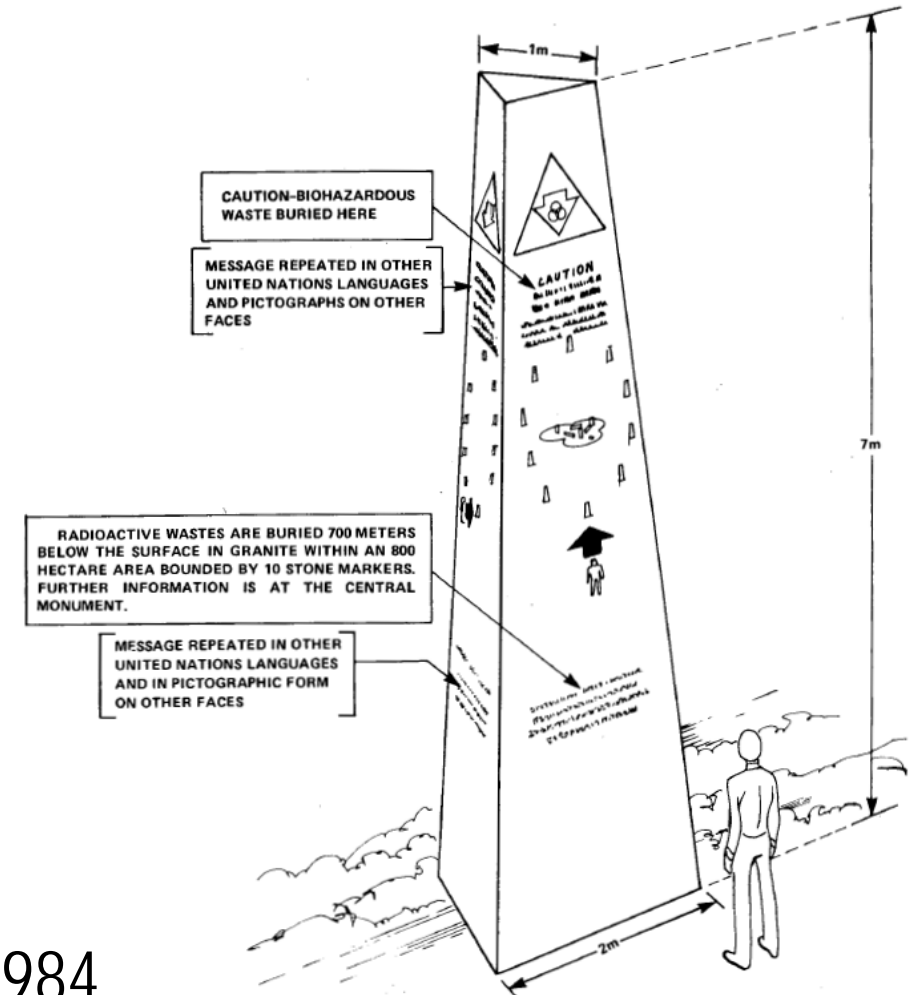
Research materials and methods

- Interviews via Teams, phone, email
- I have talked to people from STUK, TEM, Posiva Oy, former Posiva associates, (university) researchers, VTT, a museum, national archives – mostly in Finland
- Missing: Eurajoki community and other local entities perhaps
- Published materials
- Historical inquiry
- Finnish to-the-point publications are few, but otherwise a lot has been done, as also NEA showed

Previous discussion or research in Finland

- Thomas Sebeok's guest talk on atomic/nuclear semiotics in Helsinki 1981
- Essay by Heikki Niini 1986 (ethical acceptability of final disposal)
- Also a "ghost manuscript" Loppusijoituksen jälkeen / After final disposal (by Arto Ylinen)?

Image:
HITF 1984



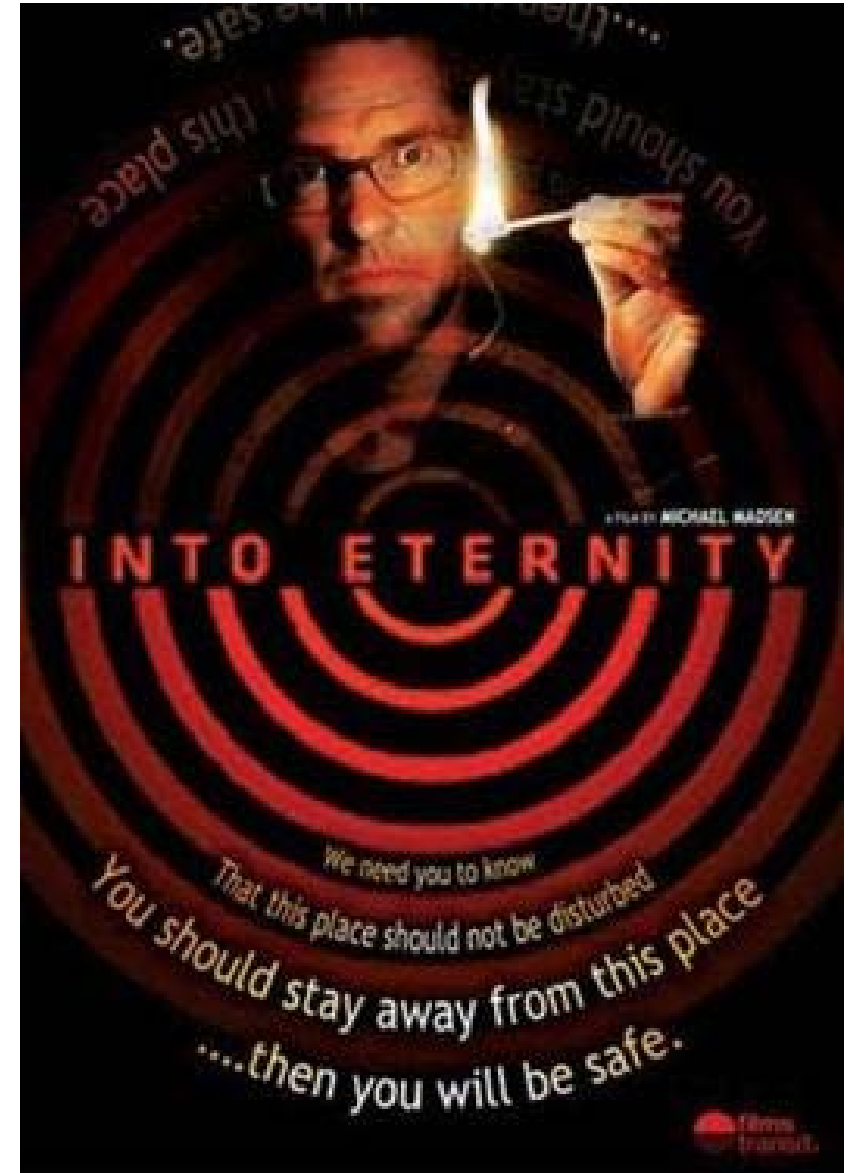
Previous Nordic and Finnish work

- Nordic project on knowledge preservation, lead by Mikael Jensen (1993)
- Government Decision (Valtioneuvoston päätös) 398/1991 included permanent preservation of waste package information
- Paukkajavaara uranium mine "closed"
- Decision in principle (2001) on final disposal with also retrievability discussed and included
- Continuity of information (etc.) discussed in safeguarding nuclear materials



Voices from the arts

- The movie *Into Eternity*, 2010
 - Finnish experts interviewed, discussion on markers documented (a rare source!)
- Included in NEA's RK&M results
- Risto Isomäki, writer
- A play: *Luolasto*, 2014
- To be continued



Results from the interviews

- Experts perceive preservation as important but forthcoming in a distant future
- even impossible to work on such an issue nowadays?
- cost: time away from more urgent issues?
- Who's responsible even?
- **Closure** or thereabout foreseen as a point in time when knowledge (and memory) preservation becomes relevant and topical
- NEA suggests a more proactive preservation strategy
- Otherwise, plenty of time to miss saving something

No / need to remember Onkalo?

- From the interviews: Olkiluoto SNF final disposal is a passive system, designed safe to leave and forget even
- Memory distortions or forgetting could later turn markers a danger
- Therefore, knowledge preservation is enough

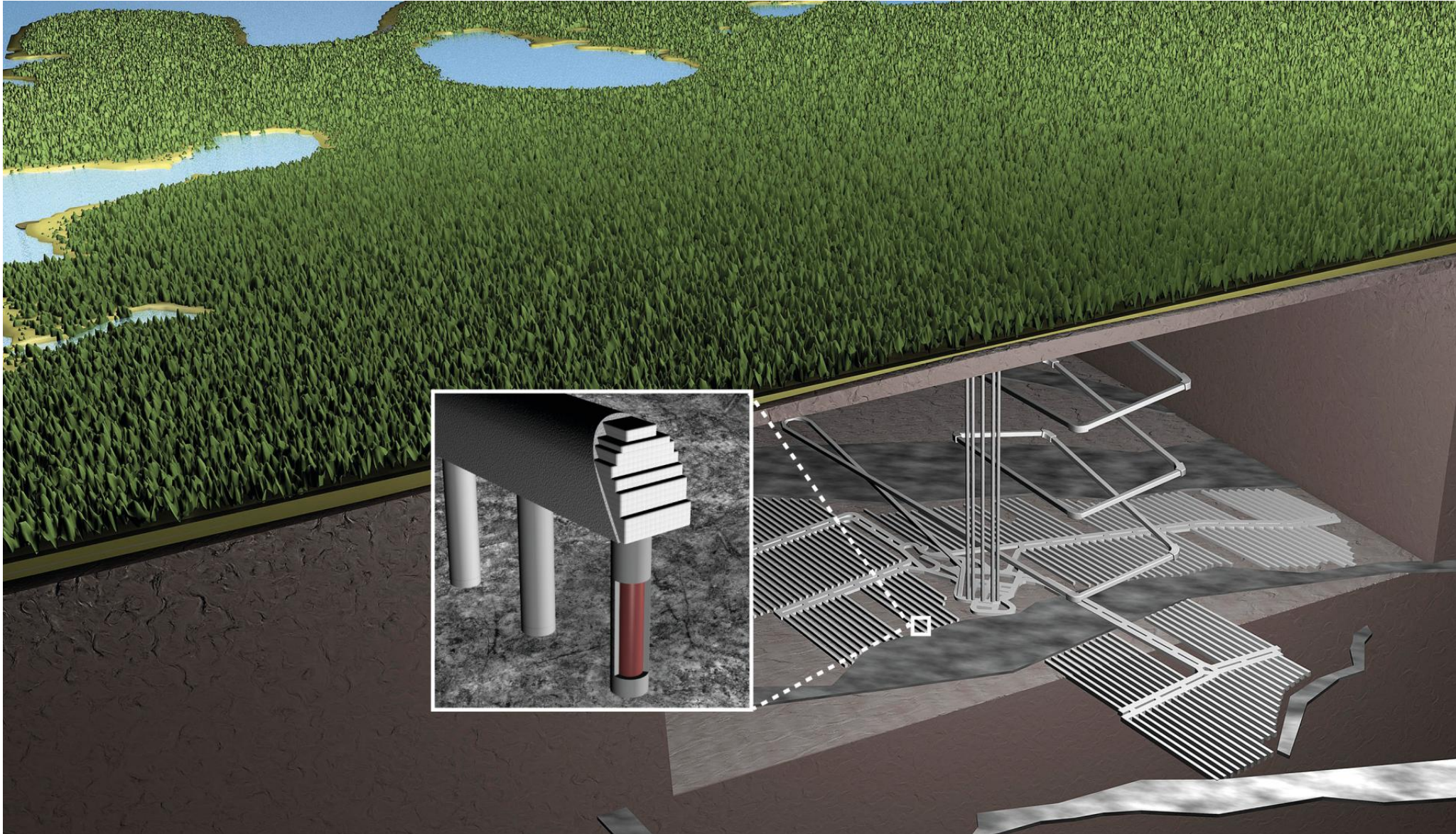
Image: Posiva



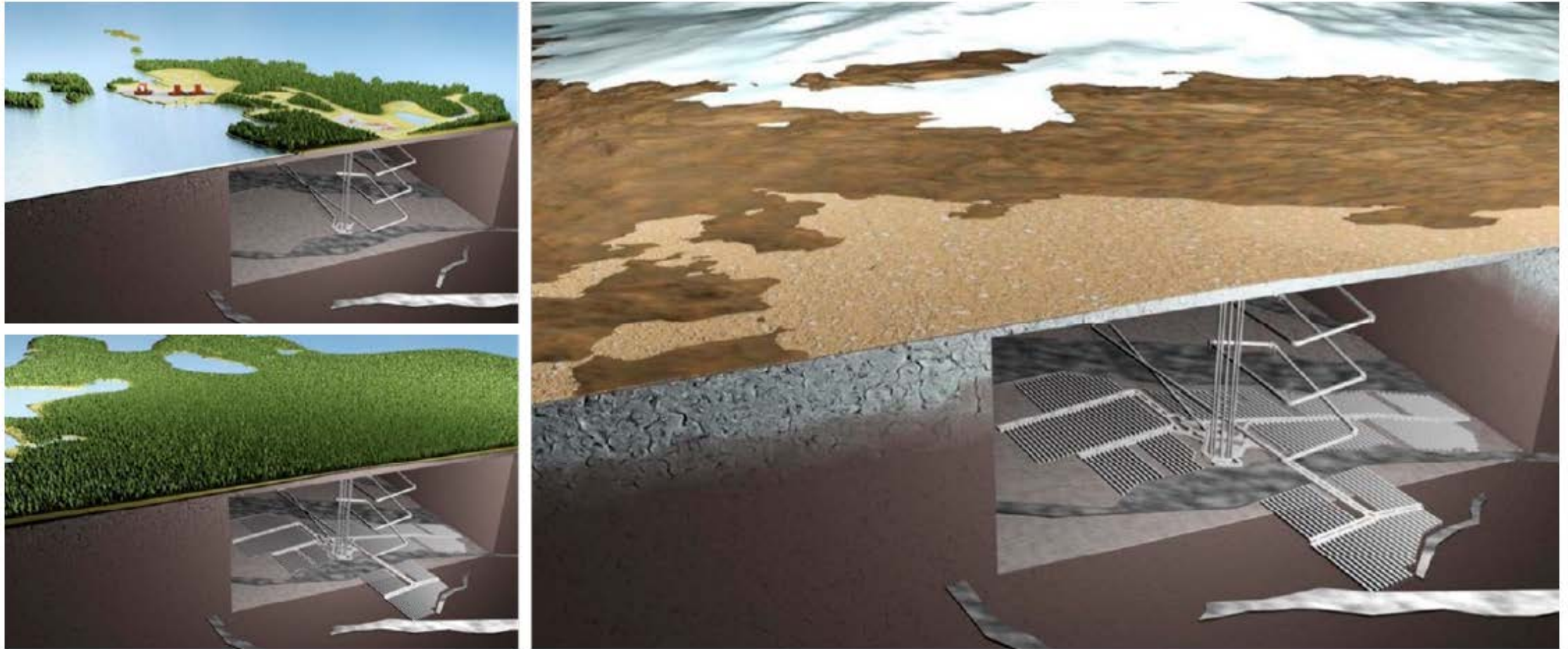
The new Operating licence application

- *Operating licence application* by Posiva from December 2021.
- Some attention to knowledge preservation and markers: **not** in the application but in a FHA report.
- Posiva Oy: Safety Case for the Operating License Application – Future Human Actions. Working Report 2021-2. November 2021.
- Seems to confirm the virtual non-existence of domestic Finnish research in this area.

After 4000 years. Image by Posiva (2021)



Operating licence application by Posiva 2021

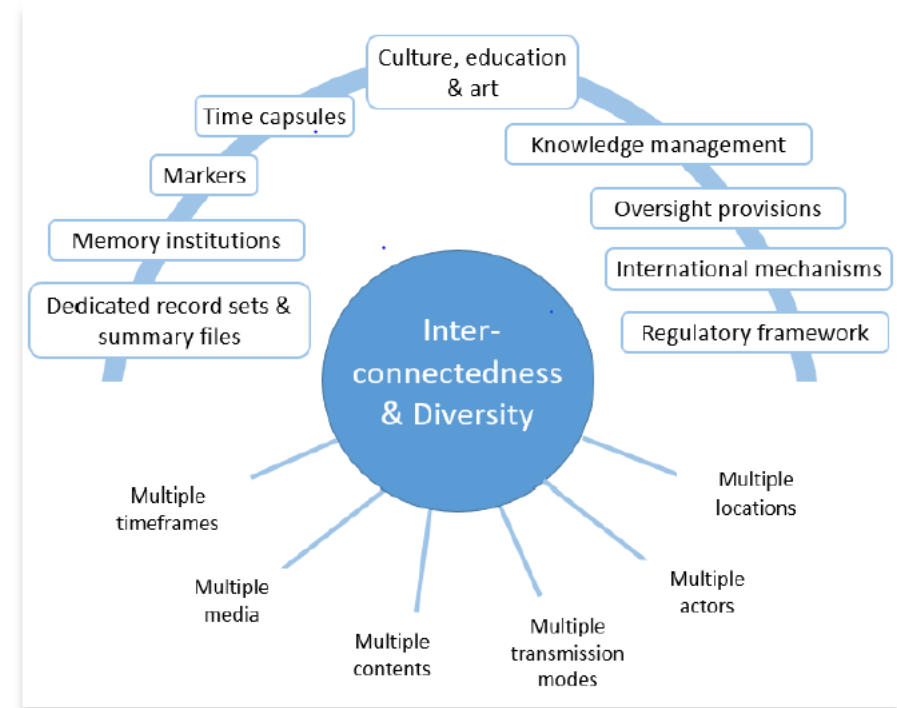


■ Kuva 22. Olkiluoto ja loppusijoituslaitos (vasemmalla ylhäällä vuonna 2020) tulee olemaan sisämaassa tulevien tuhansien vuosien aikana maankohoamisen vuoksi (vasemmalla alhaalla ~4000 vuoden kuluttua) sekä peittymään mannerjäätikön alle (oikealla ~100 000 vuoden kuluttua).

Memory (awareness) preservation

- The traditional "Finnish approach" (to forget or leave it)
- Compare to RK&M project: remembering for informed decisions by the future generations
- RK&M: a systematic strategy, started early – highlights the importance of recording history
- Principle of redundancy

Figure 7.1. A systemic strategy: Creating diversity and inter-connectedness among different RK&M preservation approaches and their underlying mechanisms



Conclusion

- Something done also in Finland but...mostly postponed for later until now.
- This "Finnish approach" has long roots and could be hard to change?
- What to do; follow NEA's suggestions for action, continue with the Finnish style, or develop something new?
- Right about now seems a sensible time to (re)visit these themes also here.

To be continued in *Tekniikan Waiheita* and *ATS Ydintekniikka* and in NEA's awareness preservation or EGAP conference this November.



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Thank you!

Any feedback welcome: petpaju@utu.fi