

Development of a Database for the Analysis of the Disposal System

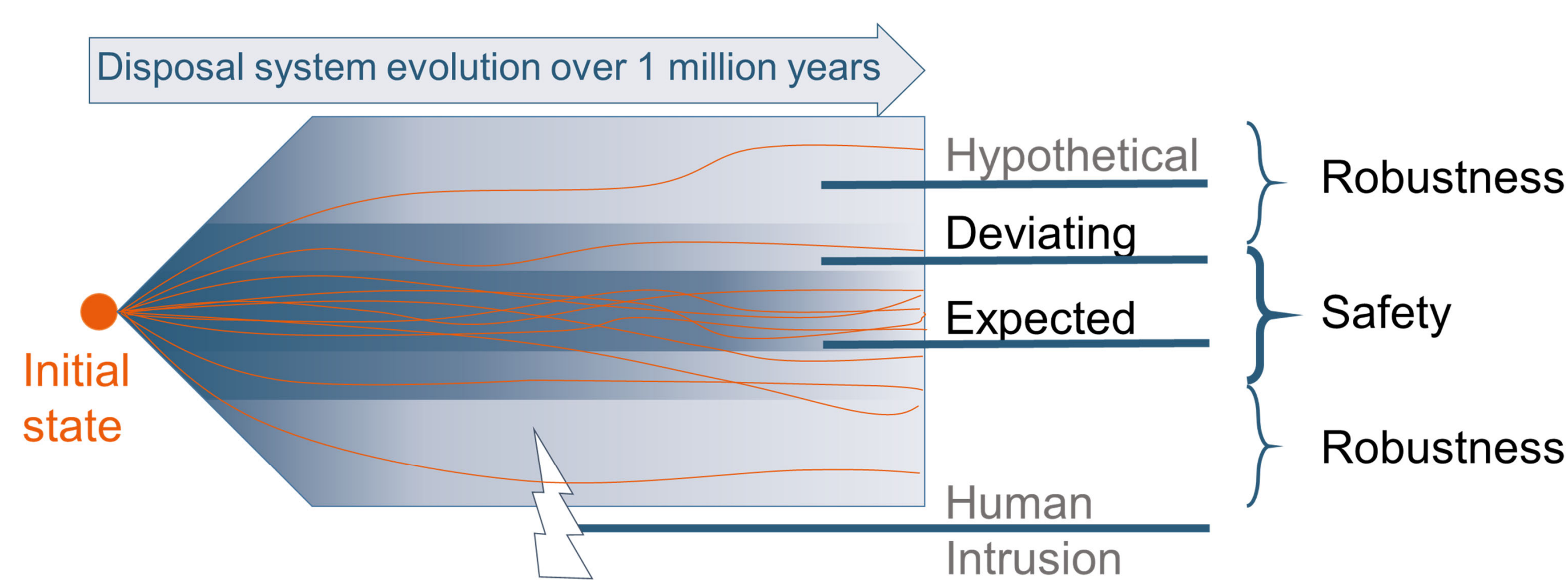


BUNDESGESELLSCHAFT
FÜR ENDLAGERUNG

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1. Introduction

The representative preliminary safety analyses aim to assess the extent to which the safe containment of the radioactive waste can be expected (Section 27 StandAG). The analyses of the disposal system will be based on the development of its future evolutions (Fig. 1, Section 3 EndSiAnfV). This requires large amounts of data concerning different components of the disposal system to be managed, for example the compilation of physical, geoscientific and technical parameters. The compilation of this data, in combination with features, events and processes (FEPs) will generate site specific potential evolutions (scenarios) of the disposal system. A **database solution** aims to not only provide the data, but also the framework needed for the analyses.



Source: BGE

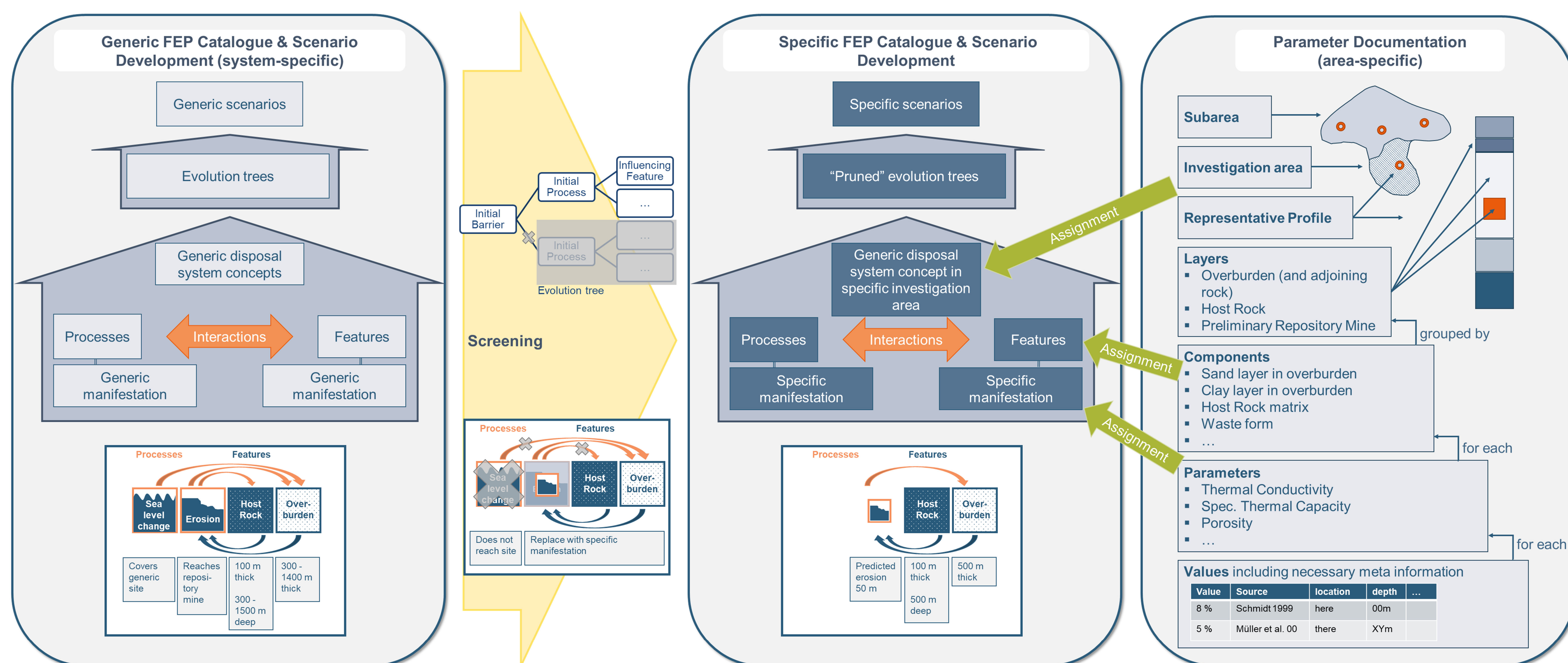
Fig. 1. The initial state marks the beginning of the post-closure phase and starting point of all expected, deviating and hypothetical future evolution of the disposal system, indicated by orange lines. A human intrusion scenario is indicated by the flash symbol. In the representative preliminary safety analyses only expected and deviating evolutions based on geogenic impacts and processes have to be considered (Section 7 para. 6 nr. 1 EndSiAnfV), hypothetical and human intrusion is therefore greyed out.

Necessary knowledge about the disposal system:

- Characterizing **features**: components and their properties
- Events and processes: **processes** acting in and on the disposal system

2. Challenges

- Large area and number of subareas will generate a large number of investigation areas and hence analyses that have to be performed.
- Scenario development in the past has been performed for generic disposal sites or to compare a small number of potential sites (Beuth et al. 2012, Mayer et al. 2019), but not yet for multiple different disposal concepts and a large number of potential sites at the same time.
- Innovation is required to reduce workload while still ensuring fair representation for each investigation area.



Source: BGE

Fig. 2. Proposed workflow for the scenario development within the scope of the analyses of the disposal system for multiple disposal concepts and multiple investigation areas.

References
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EndSiAnfV: Endlagersicherheitsanforderungsverordnung vom 6. Oktober 2020 (BGBl. I S. 2094)
EndSiUntV: Endlagersicherheitsuntersuchungsverordnung vom 6. Oktober 2020 (BGBl. I S. 2094, 2103)
Mayer, K.-M., Beuth, T. & Bracke, G. (2019): *Szenariementwicklung für verschiedene Wirtsgesteine und Konzepte*. GRS - 525. Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH. Köln, Garching b. München, Berlin, Braunschweig. ISBN 9783947685103
StandAG: Standortauswahlgesetz vom 5. Mai 2017 (BGBl. I S. 1074), das zuletzt durch Artikel 1 des Gesetzes vom 7. Dezember 2020 (BGBl. I S. 2760) geändert worden ist