

Seismic R&D Group Research and Development

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Idaho National Laboratory seismic research group continues to advance understanding in nuclear facility and nuclear power plant response to earthquakes and is producing advanced methods and tools. These tools and methods are in the process of being verified, with validation efforts planned in the near future. Table 1 outlines the role of methods, tools, and data in the seismic research group's activities.

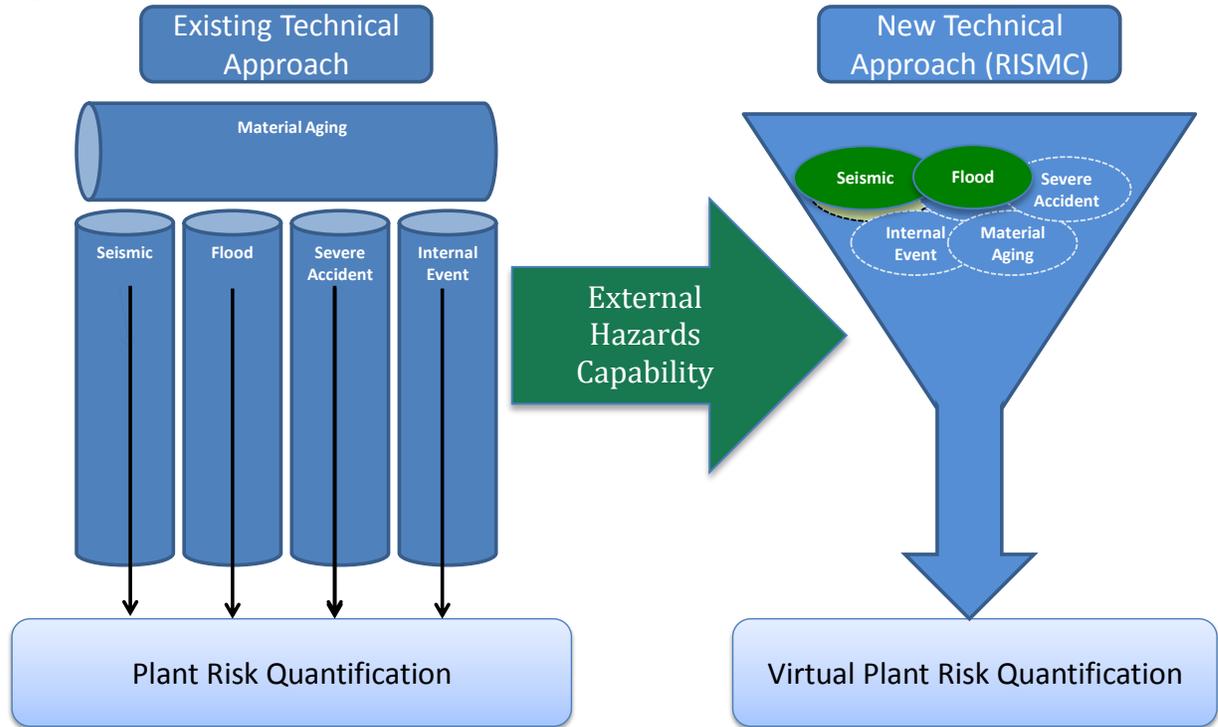
Table 1: Role of methods, tools, and data in seismic R&D

METHODS	TOOLS (Numerical Software)	DATA
Methods include acceptable numerical approaches and risk-informed evaluation approaches.	Tools development includes using and integrating existing numerical software and developing new software when necessary to support the methods.	Data will be gathered and experimental tests run to validate the methods and tools. Data will be gathered from existing experimental tests and external hazard events at nuclear power plants. Experimental tests will be performed to provide additional validation data.

External hazards (seismic) are a significant component of interest in the nuclear community, and more research is needed to reduce uncertainty and quantify the safety margin at existing and new nuclear facilities. The focus is on developing verified and validated tools and methods that can quantify multi-event external hazard risk.

The result of INL's R&D will allow nuclear facility owners to more effectively manage their external hazard risk. Figure 1 illustrates the evolution from today's current approach for quantifying NPP risk to the longer-term goal of virtually quantifying NPP performance. Notice the focus on external hazards such as seismic and flooding.

Figure 1. Evolution of Nuclear Facility External Hazards Risk Assessment and Management



The seismic research group continues R&D in:

- Nonlinear site response
- Gapping and sliding
- Response of deeply embedded structures to inclined waves
- Application of seismic isolation in advanced reactor designs
- NLSSI tool development