Probabilistic Resilience Assessment of Interdependent Systems (PRAISys)

Hazard Modeling
The hazard scenario over the entire region is generated by a modified version of the Integrated Seismic Hazard Analysis and Prediction System (ISHAP). The hazard scenario is then applied to a set of different case studies, including different earthquake magnitudes, fault types, and soil types.

Decision & Planning
The decision process can be automated by PRAISys to multiple levels. For instance, if the decision is to use a certain mitigation strategy, PRAISys can provide a list of possible actions and their outcomes, allowing for informed decision-making.

Recovery Simulation
Recovery simulations are performed using empirical data from past disasters, and the results are validated using Monte Carlo simulation. This allows for the assessment of the effectiveness of different recovery strategies. For example, the duration of maintenance tasks is simulated, and the results are used to inform policy decisions.

Resilience Forecast
The resilience of the system is forecasted using PRAISys, and the results are validated using real-world data. For instance, the forecasted resilience of a city's power grid can be compared to actual resilience indicators.

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