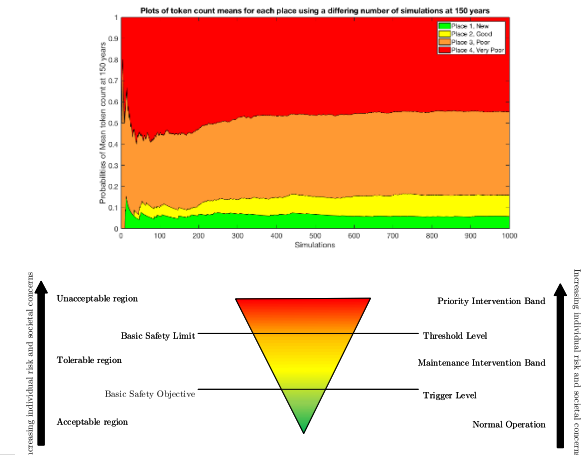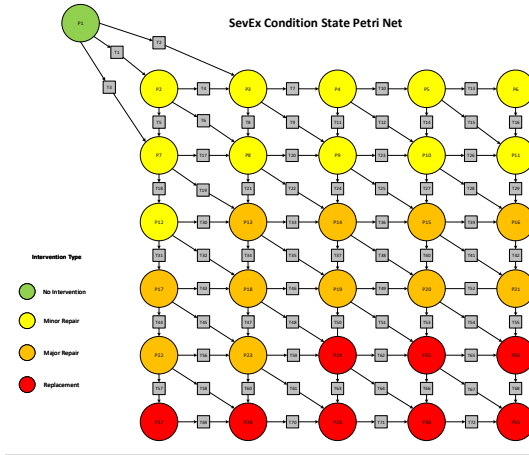# Multi-span Bridge Asset Management

Background

Bridges are made up of several components which degrade at different rates. The overall state of the structure is determined by the maintenance interventions of its components.

Objective

- Create a Generic Petri Net Software Library

- Design a model which reflects the uniqueness of multi-span bridges and masonry arch bridges. The model will utilise data from ICE historical records.

- Consider design factors such as span length, arch shape, and construction contractor in a model.

- Compare Weibull and Exponential probability distributions for models.

SevEx Condition State Petri Net

Intervention Type
- No Intervention
- Minor Repair
- Major Repair
- Replacement

Plots of token count means for each place using a differing number of simulations at 150 years

Using Network Rail data, transition rates can be computed for component deterioration. Using the deterioration rates and expert engineering judgement on the design factors; a deterioration model tailored to multi-span bridges can be developed.

Probabilities from Example ABT Transition Rate Matrix over time with element starting in A1