ETH zürich

Estimating Railway Bridge Interventions for Specific Planning Periods Using Digital Support

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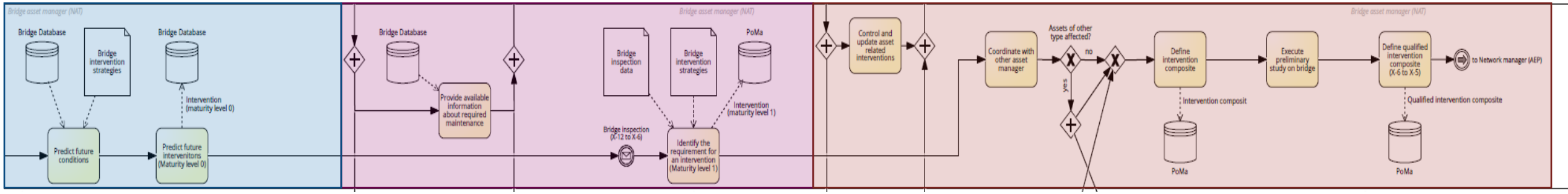
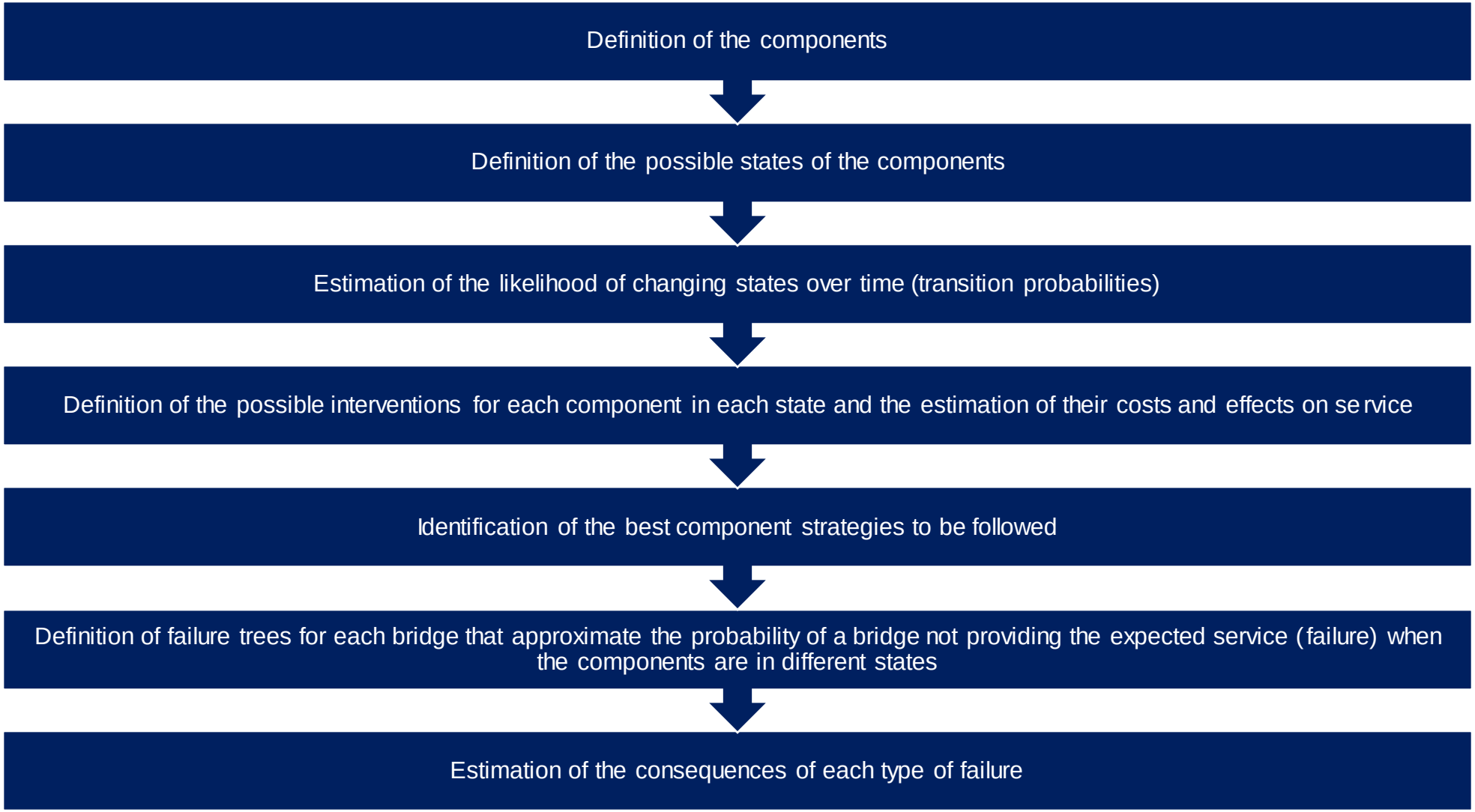
Introduction – Intervention planning process

- Bridge managers estimate required interventions at different times and at different levels of detail, which is approximately
  - 15 years ahead of T, when the network developer asks (Maturity level 0)
  - 10 years ahead of T, when line and network planner asks (Maturity level 1)
  - 5 years ahead of T, when the results of preliminary studies exist.



STABILITY's interviews, 2021

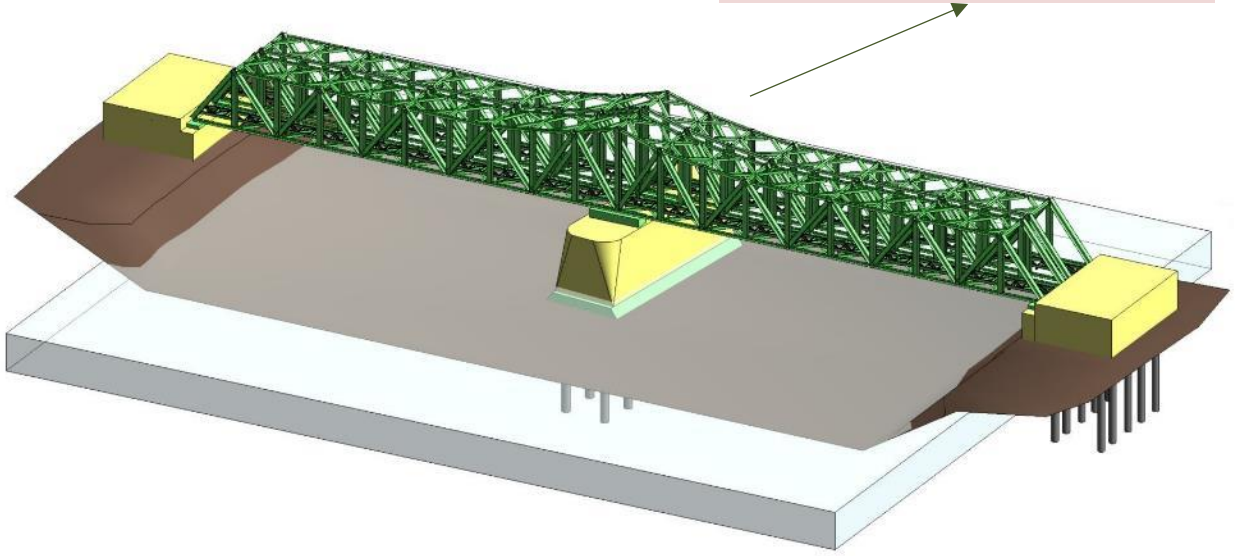
How do we propose to do this?

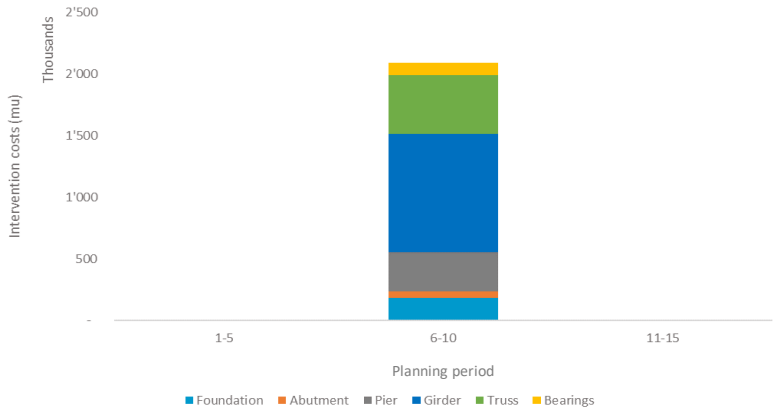


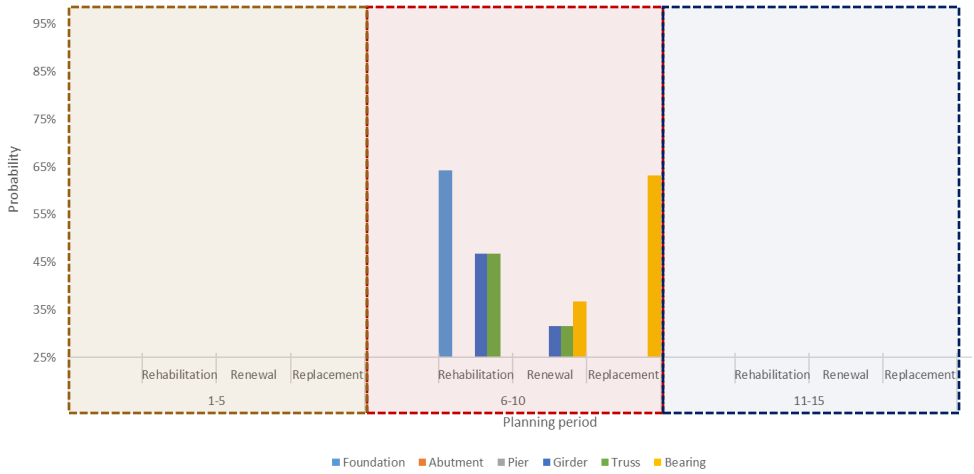
Aarebrücke example – Results
Which interventions does Aarebrücke need in the next planning periods?

- The model provides an overview of the likelihood of requiring an intervention in each possible future time periods

47% chance that the trusses require a renewal of the corrosion protection and 22% that trusses require complete replacement







The advantages of the proposed methodology

- The proposed methodology increases the ability of bridge managers to quickly and confidently estimate the interventions required in specified future periods, taking into consideration
  - the different bridge types,
  - the life-cycle of the bridges and their components, and
  - the failure risk through the use of failure trees connected to the condition of the components for each relevant deterioration process.

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