FP6 Alpine Fault

- First order assessment of DI networks in South Island
  - Traditional vs physics based GM ground motion simulation outputs
  - Comparison with AF8 impact scenarios
  - Development of structure to link hazard – component – network – socio-economic metrics

  - This project will focus on the immediate post-event impact across the south island and the initial steps in recovery. This will build on current estimates of infrastructure network impacts through regional lifelines work and the AF8 project (building on the scenarios that wil be used in this project).

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New

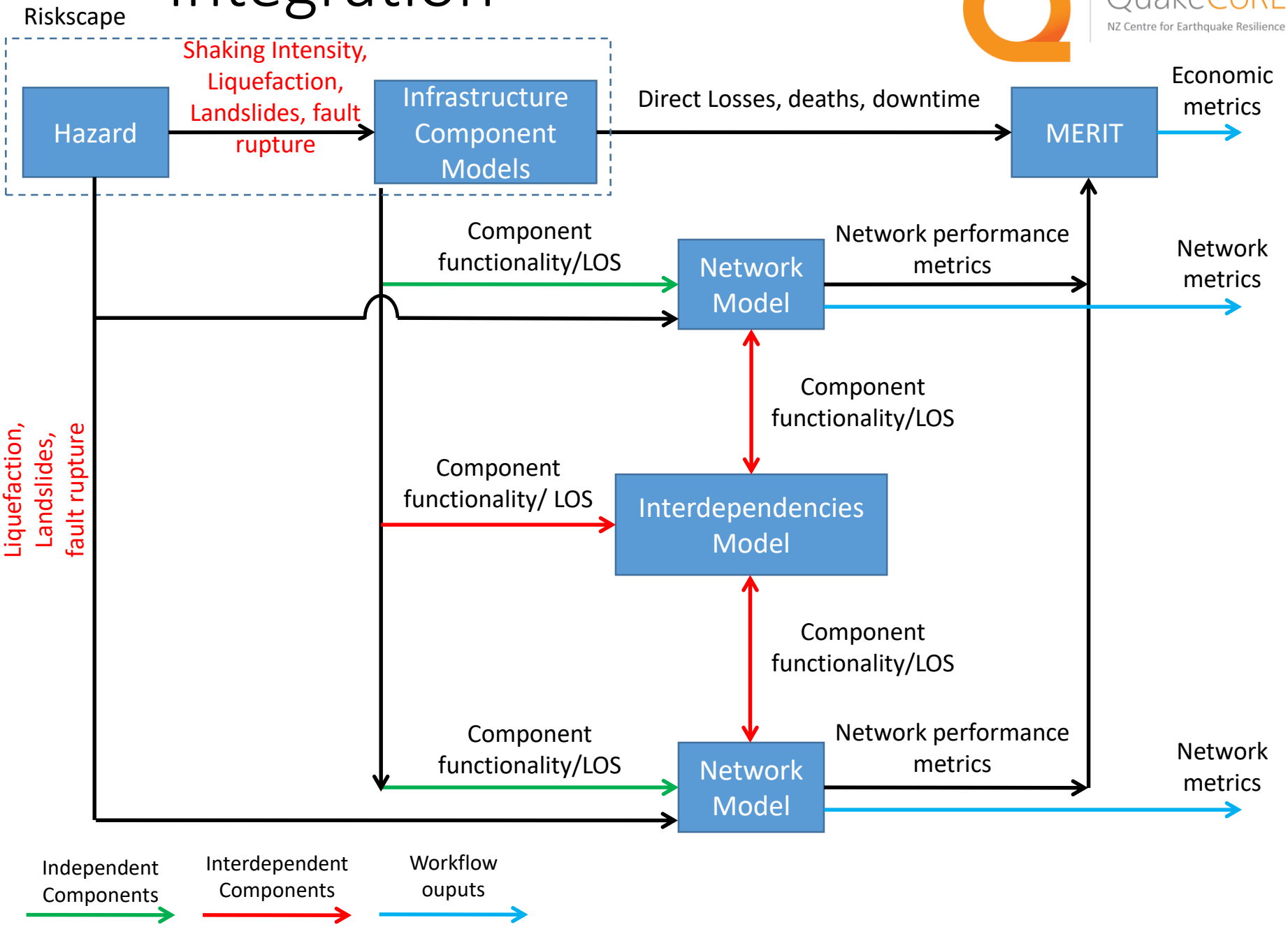
- Direct comparison of landslide likelihood models using empirical and physics based GM simulation
- Development and comparison of infrastructure network impacts and dependencies across networks from empirical vs physics based GM
- Influence of Alpine Fault rupture characteristics on expected infrastructure network impacts
- Comparison back to previous EQs

Links between thrusts

- In
  - GM Simulation (empirical and physics based) from FP1
  - Hazard and impact scenarios from AF8
  - Liquefaction assessments from FP2
  - Infrastructure network datasets – many in hand
  - Landslide modelling (e.g. Robinson et al. model)

- Out
  - Geospatial dataset of infrastructure impacts (new models) and recovery (expert based)

Integration



Project Areas (1)

- ‘End to end linkages’ RfP FP6 project currently underway (this should be factored into wider project plans). This will map linkages between different software packages, including Riskscape and MERIT.
- Landslide impacts – the model of Robinson et al. can be used to assess likelihood of landslides for different scenarios. This can link into new PhD in this area in the future iterations of Alpine Fault assessments.
- Use Riskscape and other products developed through existing QuakeCoRE/RNC projects to assess damage state of infrastructure components.
- Interdependency modelling across all networks can be performed using the approach of Zorn (underway). Comparison of propagation of outages for each scenario event will be undertaken.
- Buried infrastructure impacts can be assessed in an aggregated sense using the research of Bellagamba et al. This will require collation of datasets for potentially impacted urban areas. Christchurch case study can be presented.

Project Areas (2)

- Use the route assessment from the NZTA-OPUS project on hazard and impact characterisation along SH routes to provide high level characterisation of impacts and link back to Robinson project and the GM intensities.
- Compare predicted impact on bridges from NZTA-OPUS work for particular intensities with bridge stock performance in Kaikoura earthquake and the Christchurch earthquake as a reality check.
- Undertake high level geospatial comparison between stopbank database and GM intensity for each scenario.
- Electricity impacts will be assessed in conjunction with existing electricity network project through RNC.
- Details of landslide debris clearance volumes and timing from the Kaikoura earthquake (collected in collaboration with NZTA) could be used to estimate clearance timings for Alpine Fault event. The timeline of this project and the timeline of Kaikoura recovery means some informed estimates could be made.