Overhead Renewal Planning Tool

CONDUCTOR HEALTH MODEL

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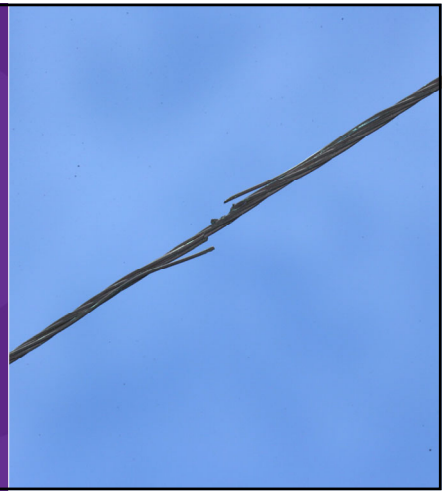
The problem

WHY CONDUCTOR IS SO HARD TO WORK WITH



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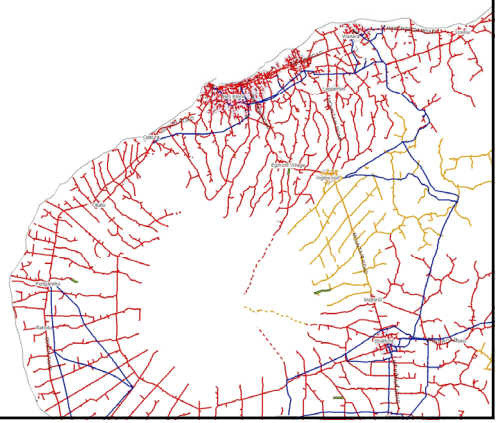
How we used to do things

INEFFICIENT, SLOW, PRONE TO ERRORS

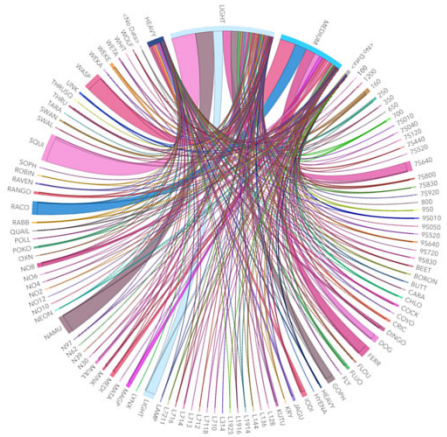
- On 'known' type issue for example 16mm Cu, Namu
- On 'known' location for example ACSR within 5km's of the coast
- Conductor reported as been in poor condition
- All of one type of conductor cannot be replaced with the budget provided
- Conductor with a health score of H4 was been replaced – once samples were inspected from completed projects
- Low number of defect listed against our physically biggest asset = no knowledge base



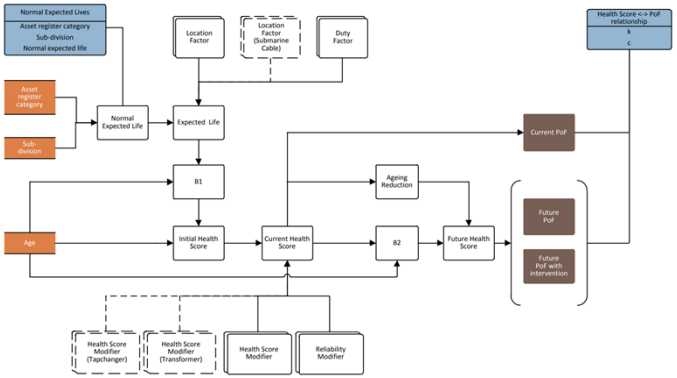
Challenges

TOO MUCH DATA/INFORMATION TO MAKE SENSE OF

- Large number of different types of conductor on the footprint
- Age range from the 1940's to 2019



Common Network Asset Indices Methodology



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PROCESS AND DATA

Initial health score

Location factor
- NIWA data sources (corrosion, elevation, wind speed); aging rate & normal expected life

Current health score

Health score modifier
(# of joints, defects, visual assessments, sample test results
Reliability factor
- (installation issues, grease holidays, fault currents)

Future health score

- forecasting aging rate
- age reduction factor

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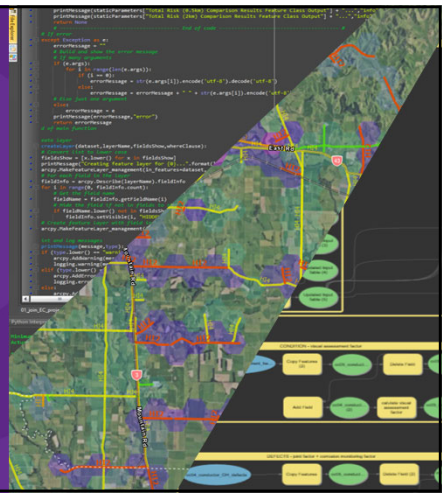
How we built it

GOING SPATIAL...



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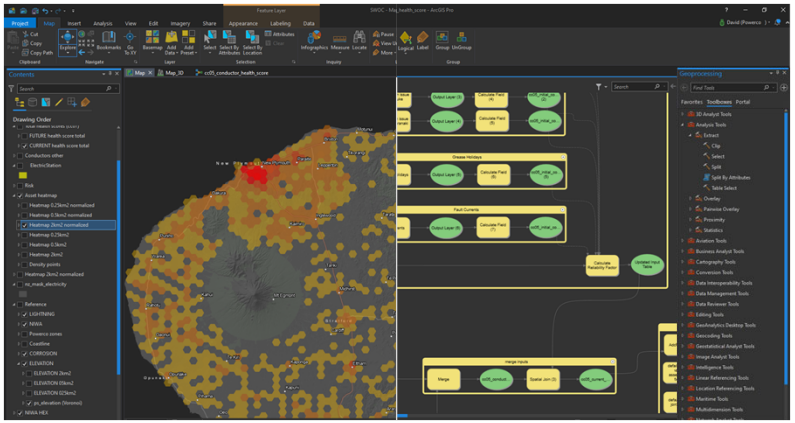
Using GIS



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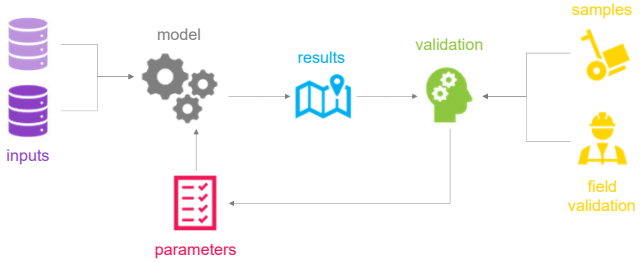
Model validation and challenges



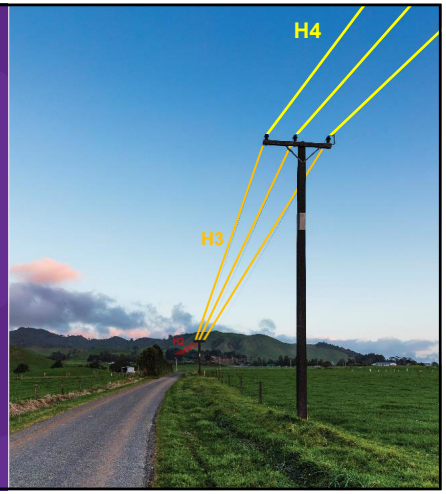
constraints

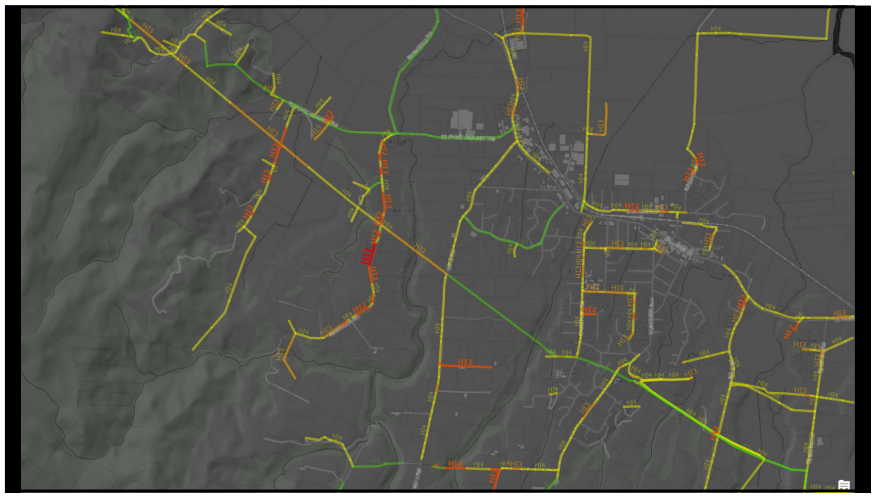
1. Validation data – no big set available yet
2. Data accessibility
3. Data quality/lack of data

The results

DEMO –
CONDUCTOR HEALTH SCORES

H5 – as new
H4 – normal in service deterioration
H3 – end of life drivers for replacement present
H2 – end of life, PoF is high
H1 – replacement renewal recommended





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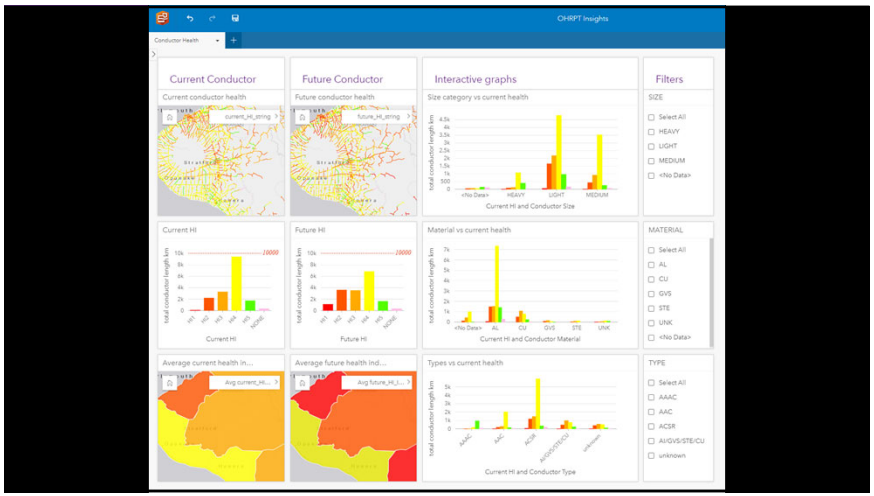
OHRPT Insights
Conductor Health
Current Conductor
Current conductor health
Future Conductor
Future conductor health
Interactive graphs
Size category vs current health
Current HI and Conductor Size
Filters
SIZE
Select All
HEAVY
LIGHT
MEDIUM
<No Data>
Current HI
Future HI
Material vs current health
Current HI and Conductor Material
MATERIAL
Select All
AL
CU
GVS
STE
UNK
<No Data>
Average current health in...
Average future health ind...
Types vs current health
Current HI and Conductor Type
TYPE
Select All
AAAC
AAC
ACSR
AI/GVS/STE/CU
unknown

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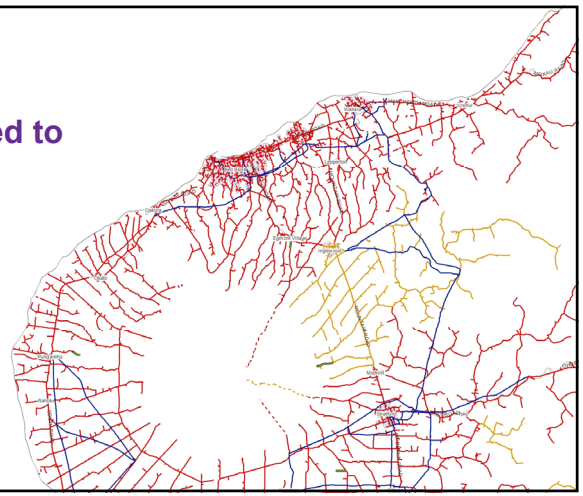
What we used to have..



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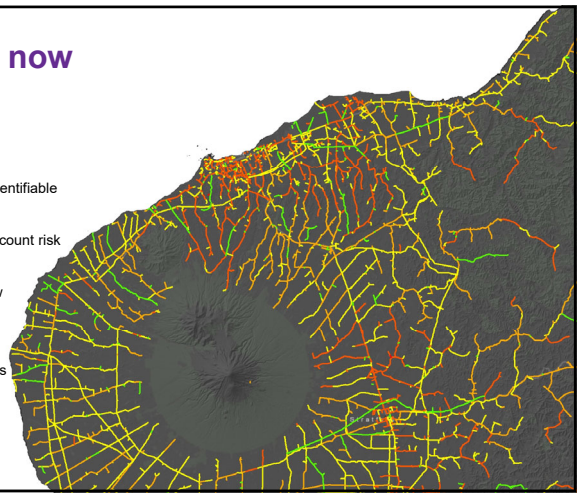
What we have now

BENEFITS

- Conductor health scores
- Conductor renewal projects identifiable
- Identify projects taking into account risk
- Quickly identify projects – new efficiency
- Change in engineering insights
- More plans and ideas



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Questions
Whanganui