LineSoft

Power Lines Pro

# EESA NSW Conference

November 26, 2018

# About Us

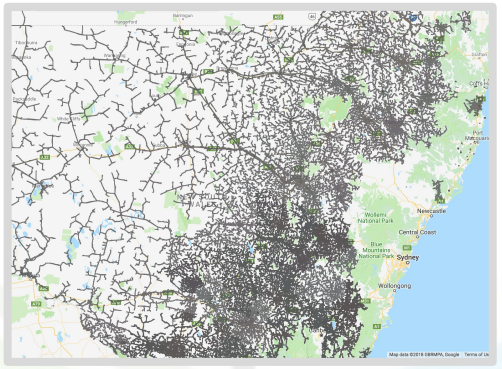
## From Google to Power Lines

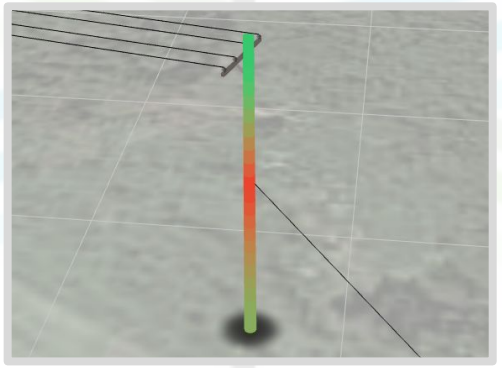
# LineSoft - at a glance

1 **Design & Modelling**
Intuitive, 3D, cloud-based modelling for distribution design

2 **Asset Management**
Unified asset & project life cycle system. Cloud/desktop/tablet

3 **Network Analysis**
“Digital Twin”: physics-enabled, scalable application of design capability

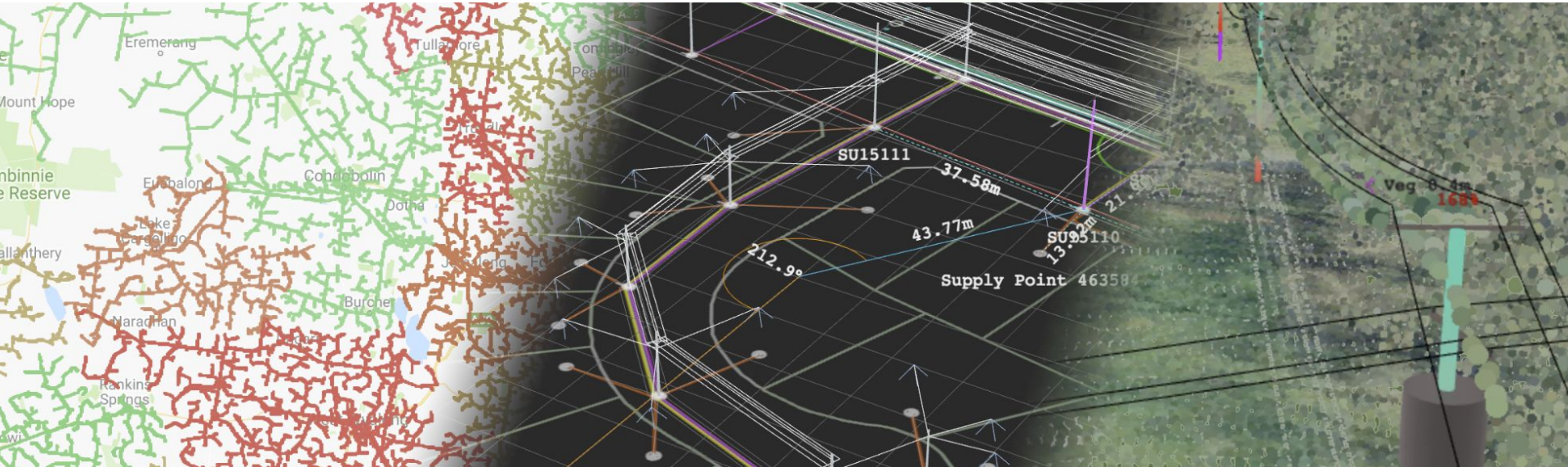


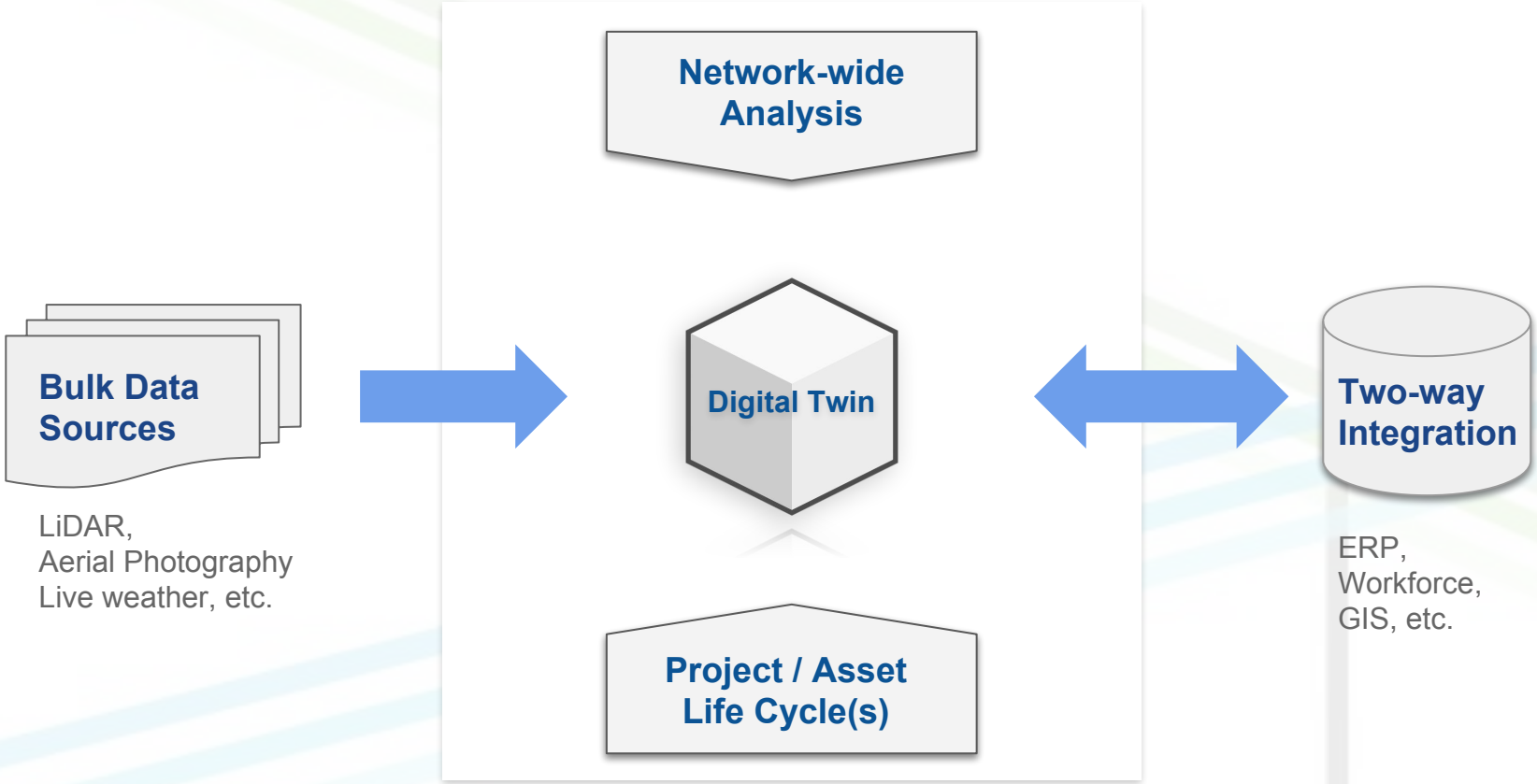
# Digital Twin

*By 2020, 30 percent of the Global 2000 companies will be using data from a digital twin to improve decision making - IDC*

**Our Vision:** A scalable physics enabled model of the network integrating analysis, design, and asset management



# Collaborative Digital Twin



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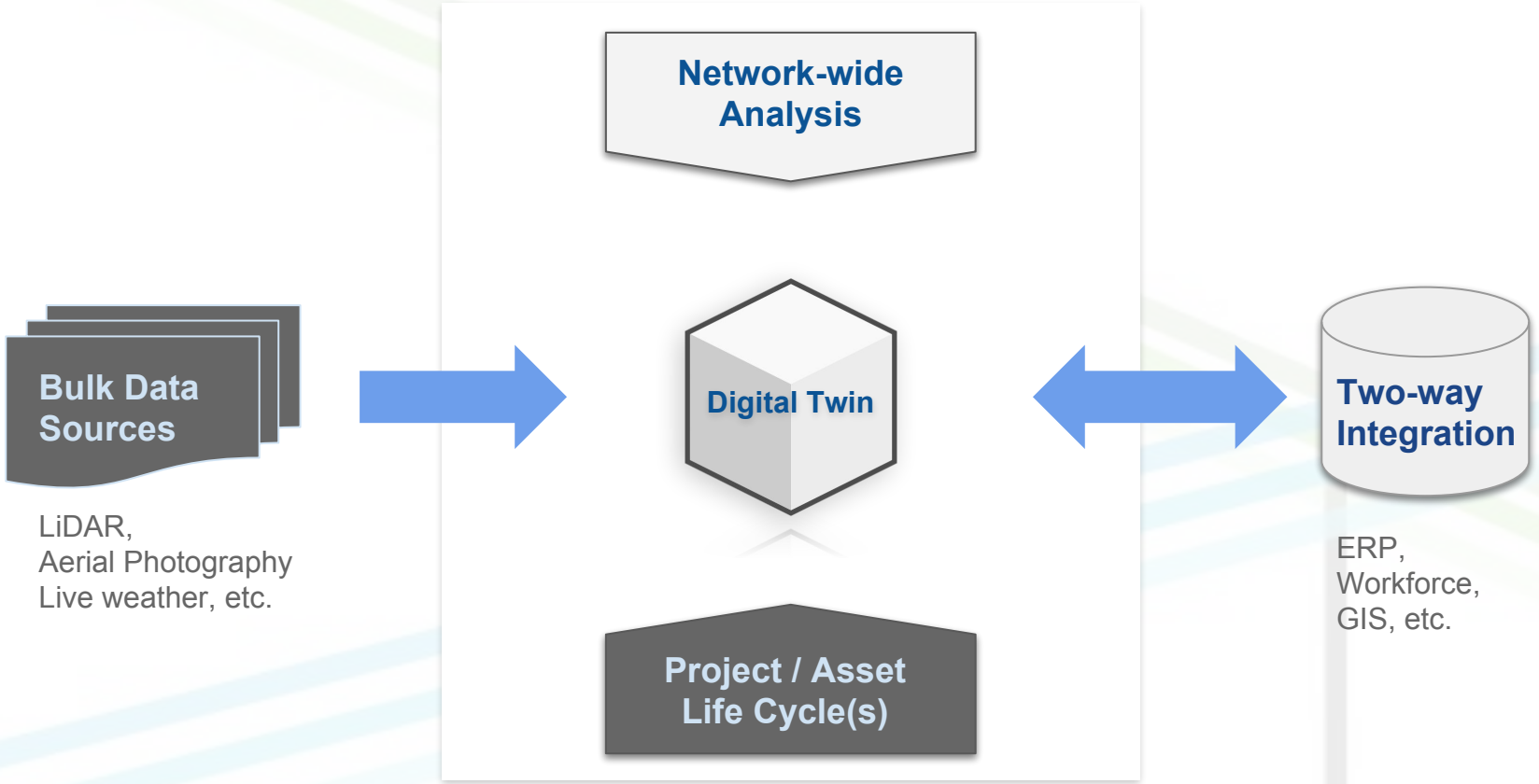

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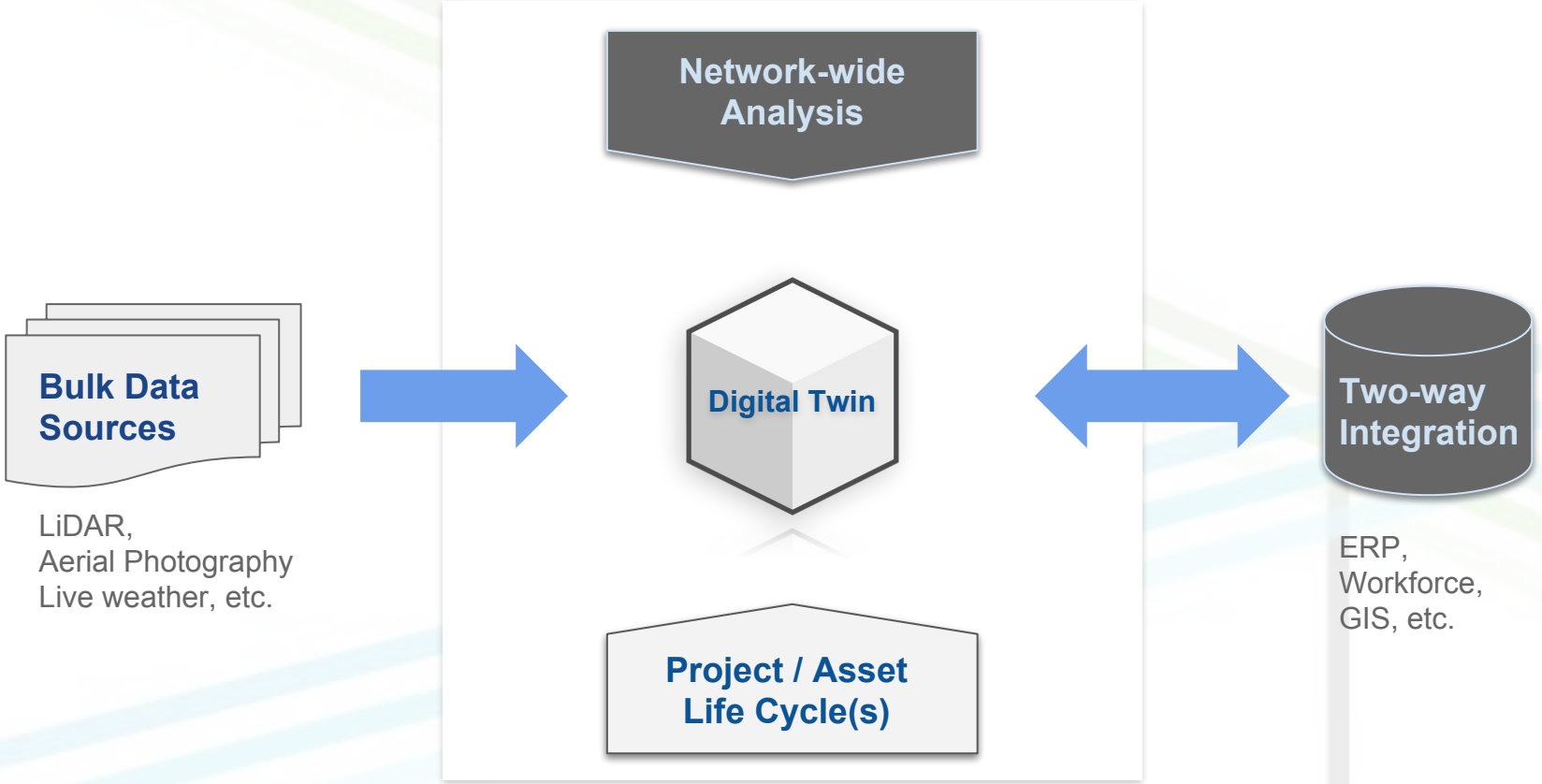


# Benefits

## Be Proactive, Not Reactive

*Optimize network performance and anticipate and prevent failures*

## Adapt to Change

*Collect real-time data to accelerate and improve decision making*

## Visualise and Understand

*Easy to see the state of individual assets or the entire network*

## Collaborate

*Broaden external networks to enhance partner collaboration*

## Prioritise Spending

*Risk based decision making at all levels*

# Risks

## Complexity

*Dealing with various siloed solutions and data sources*

## Long time-to-value

*All-or-nothing approaches may fail to achieve material benefit*

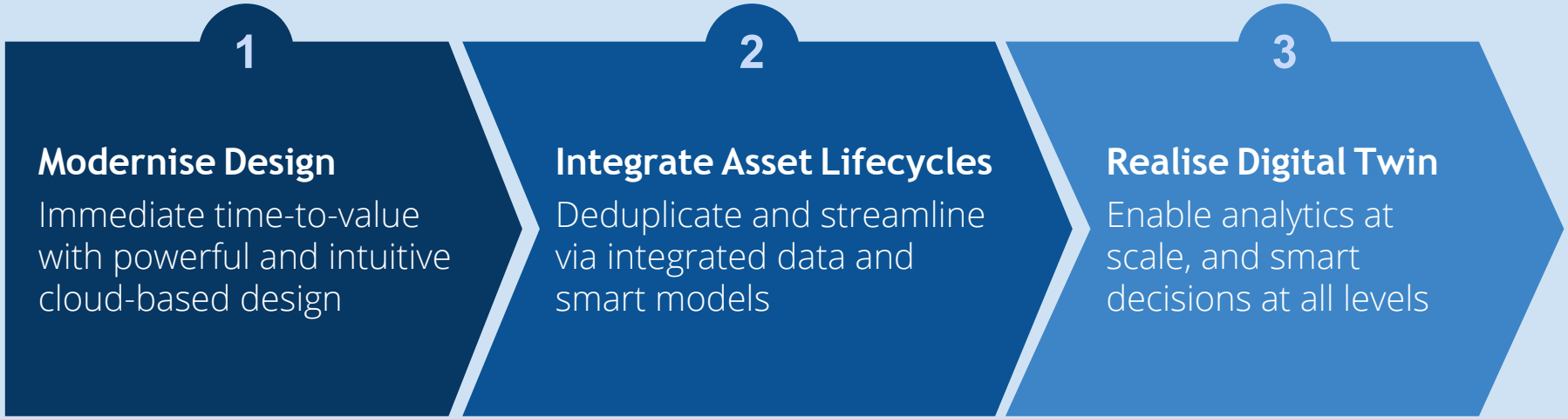
## Organisational shift

*Disruptive to existing processes*

# How do we get there?

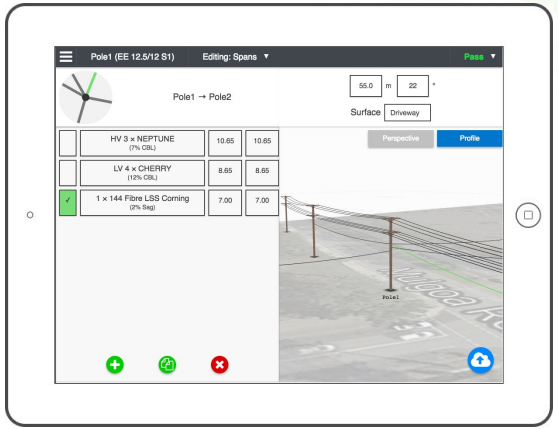
*Add value at all levels of adoption*

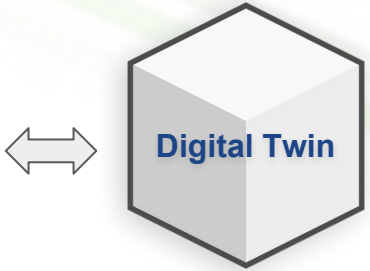
*De-risk by seeing immediate and increasing value at each incremental step*



# **Workflows**: Collaboration

## Streamlined change process and accurate asset capture



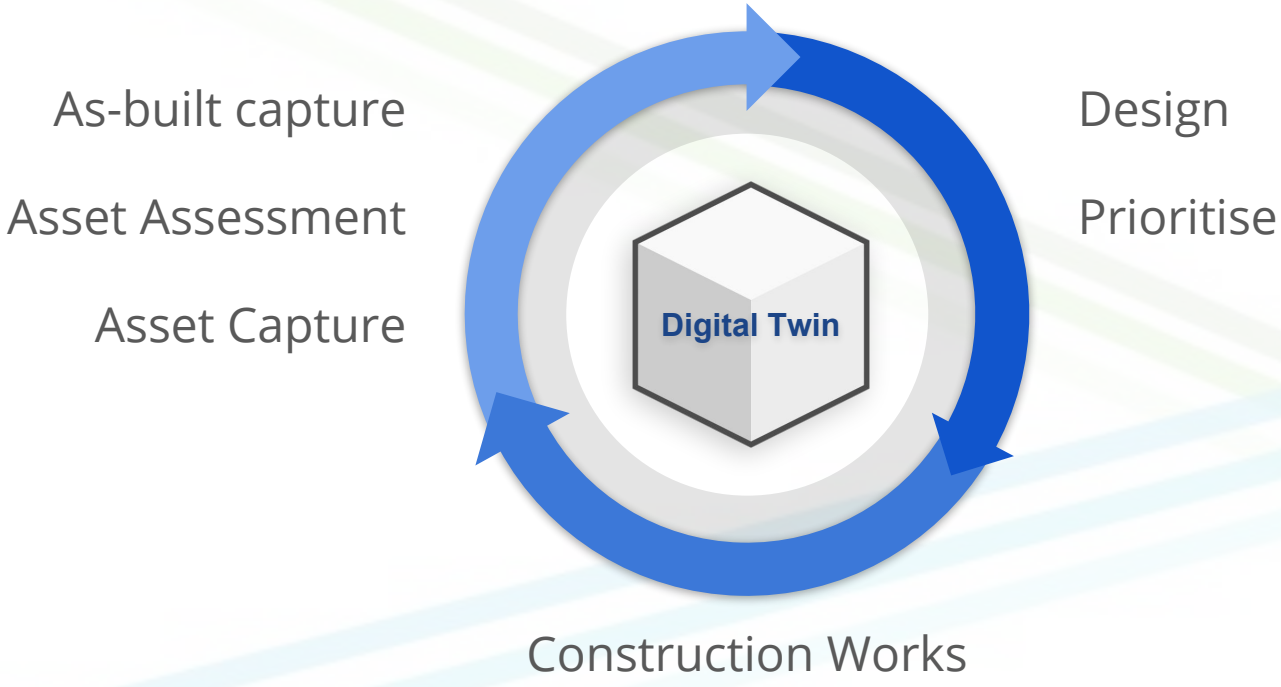



Field user

Desktop user

# **Asset Management**: Design Life Cycle

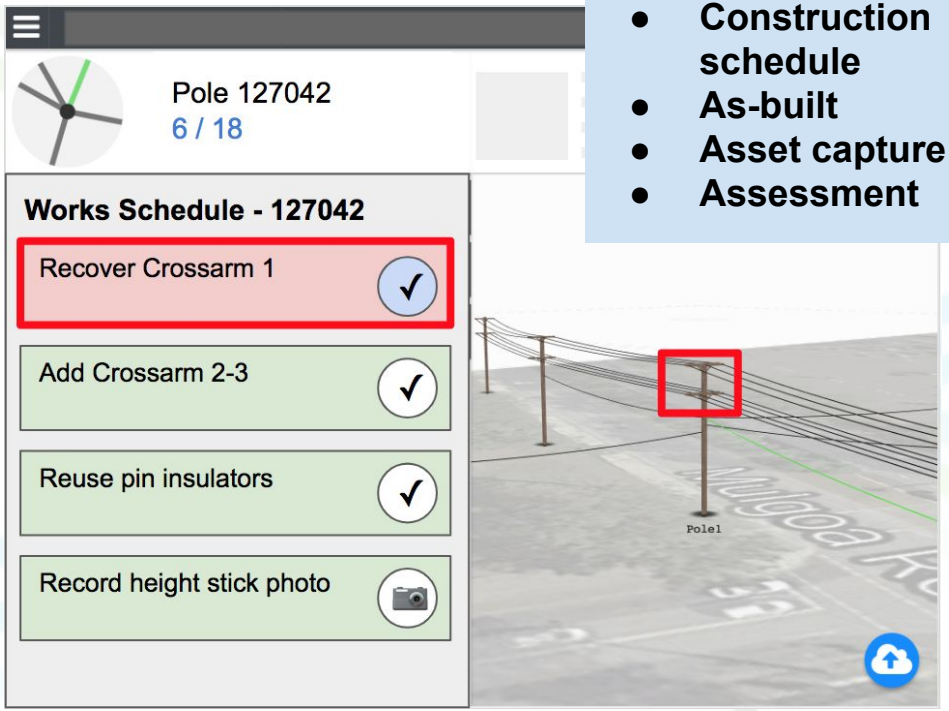
Holistic end-to-end life cycle support across devices



# **Asset Management**: Tablet Experience

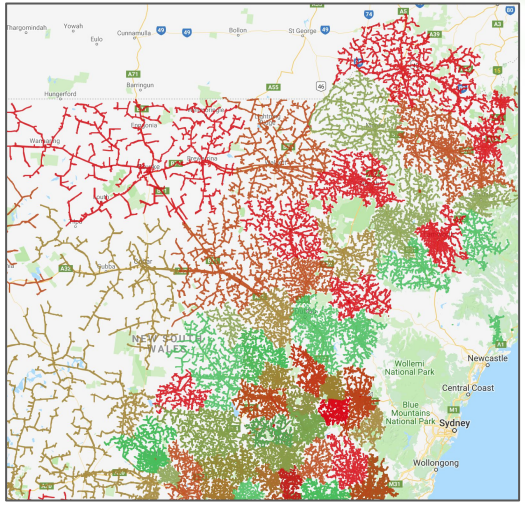
**Field User**

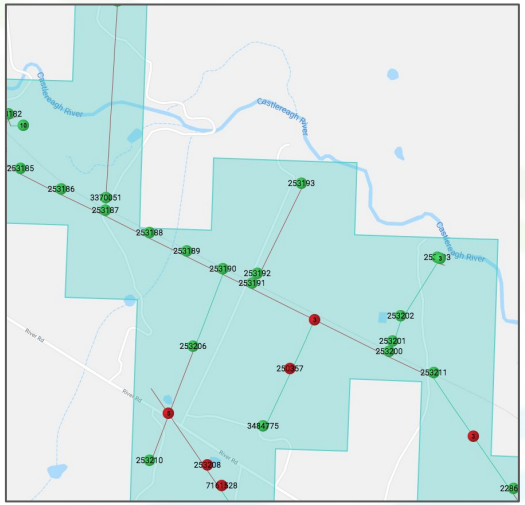
- **Construction schedule**
- **As-built**
- **Asset capture**
- **Assessment**

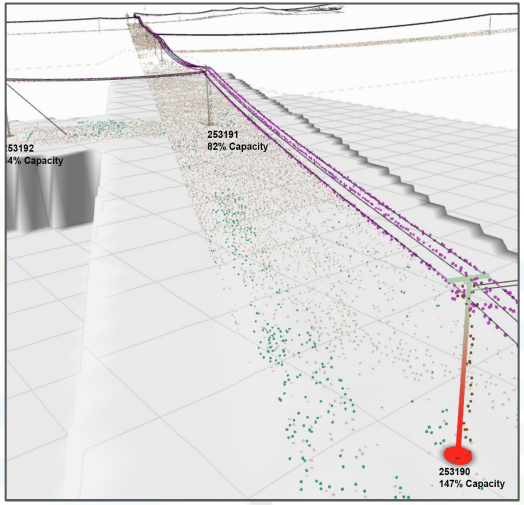


# **Network Analysis**: All levels

Scalable application of real design capabilities, from whole-of-network to individual asset



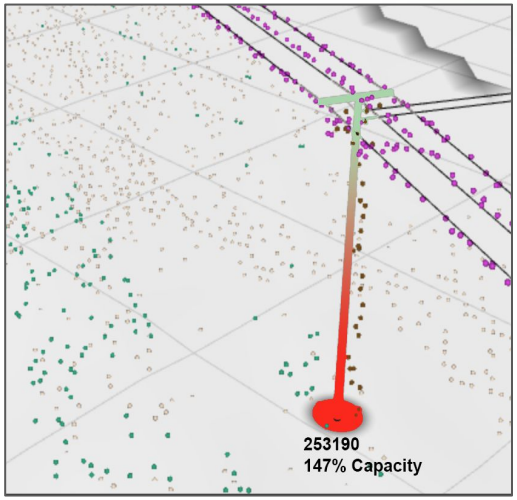




**Network-wide**
risk-based prioritisation
bulk assessment

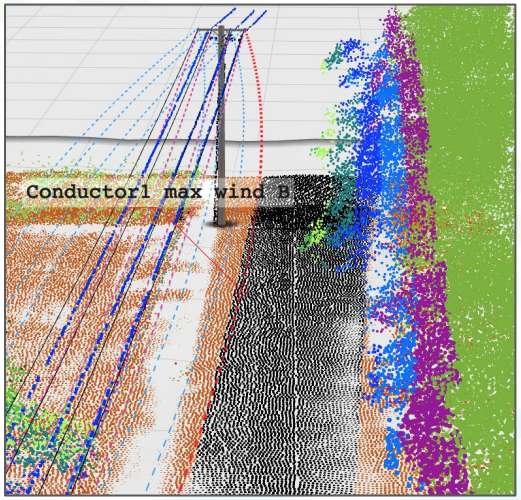
**Job / Area**
workflow
asset life cycle

**Asset / Design**
detailed analysis
immersion + comprehension

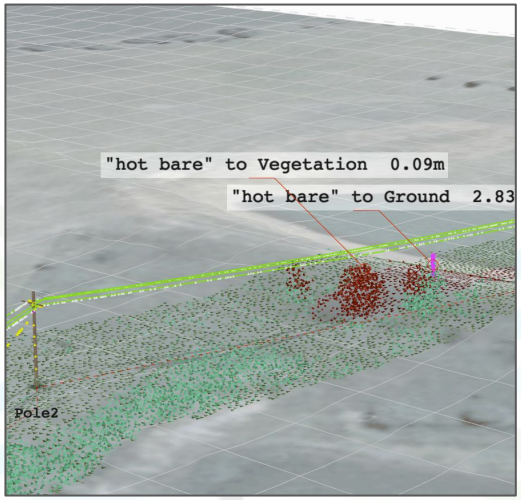
# **Network Analysis**: Other Examples




Structural Loading




Clearance




Real-time risk

# Join us on this journey!

Uplift your design capability

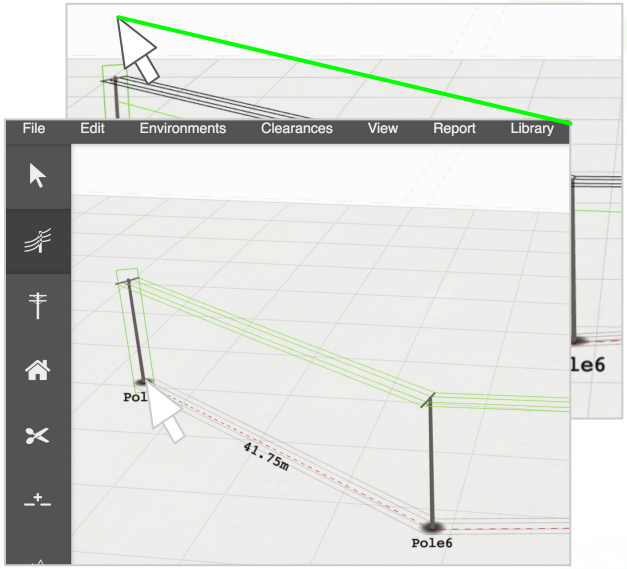
office-and-field design change management

Investment prioritisation and real-time decisions

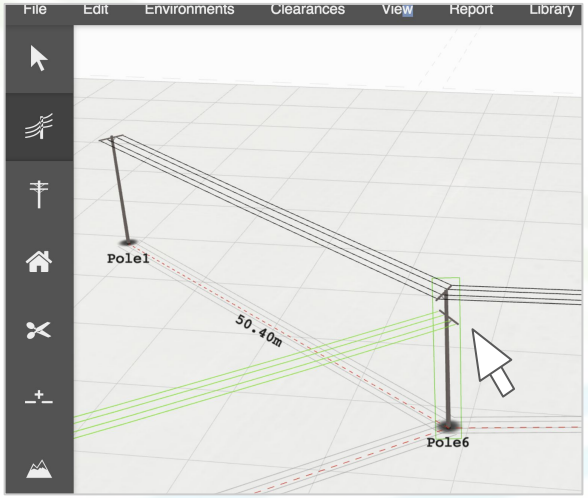
# Questions

# Design & Modelling

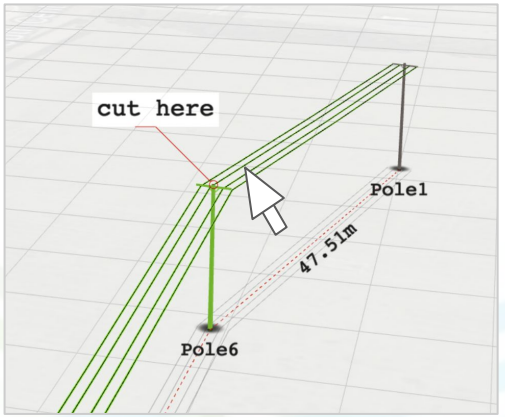
# **Design & Modelling**: Intuitive & Visual




Placing & Stringing

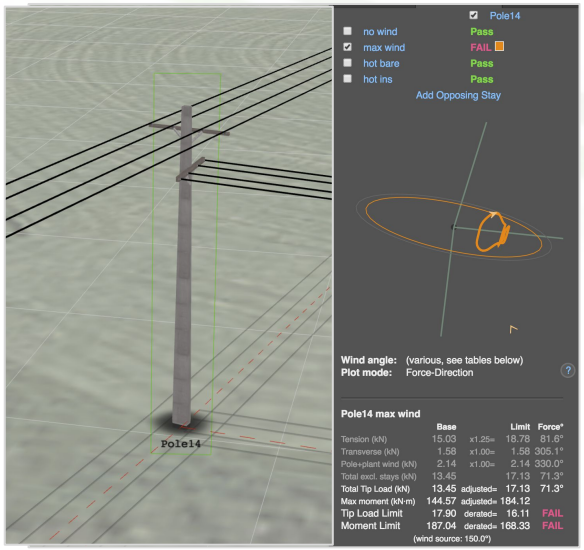



Tee-offs

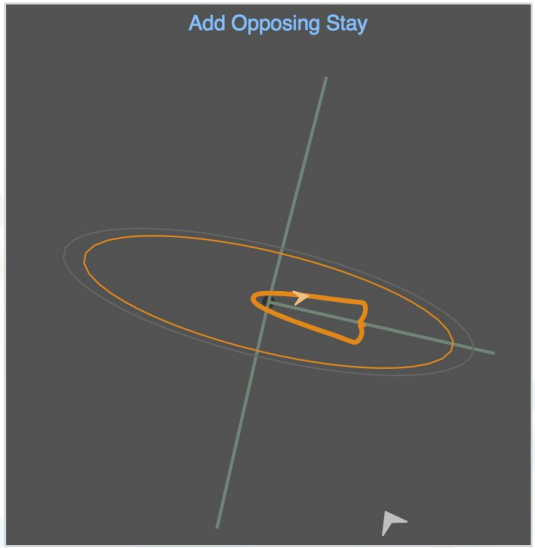



Chop & change

# **Design & Modelling**: Structural Modelling

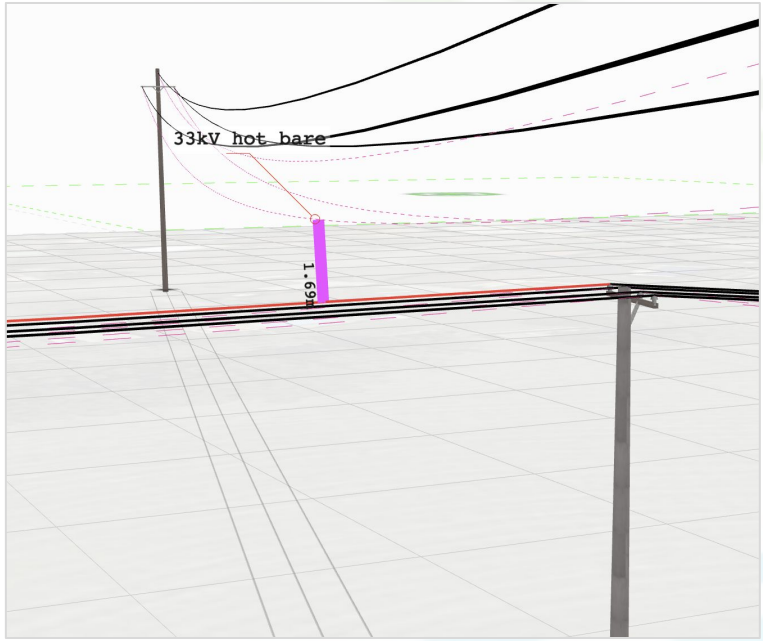



Tipload,
bending moments.
rectangular pole support

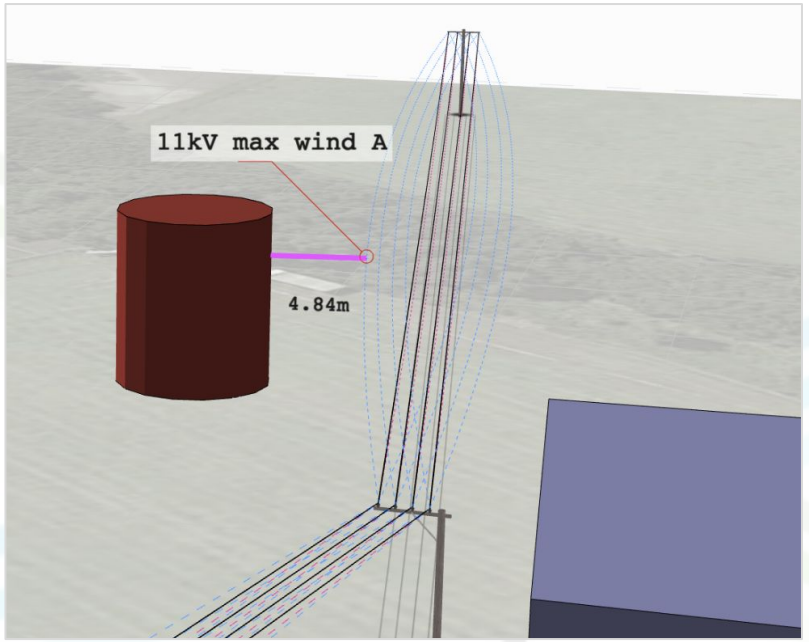



Dynamic visualisation

# **Design & Modelling**: 3D Clearance Assessment

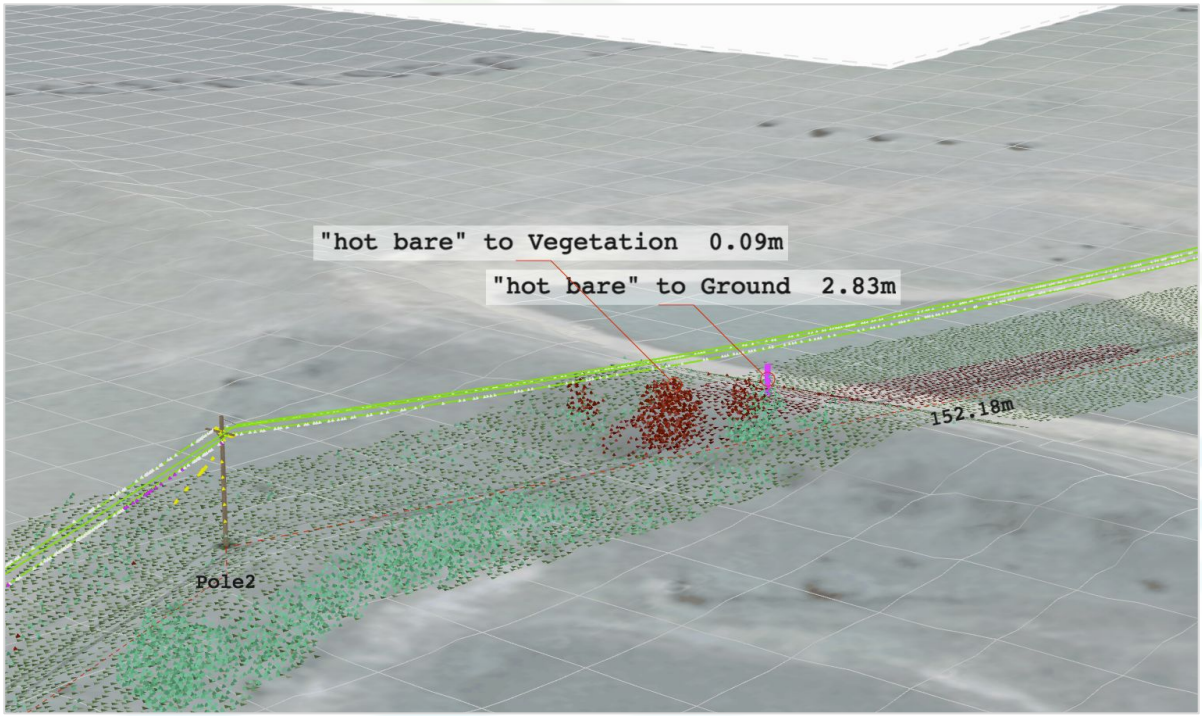



Hot to cold



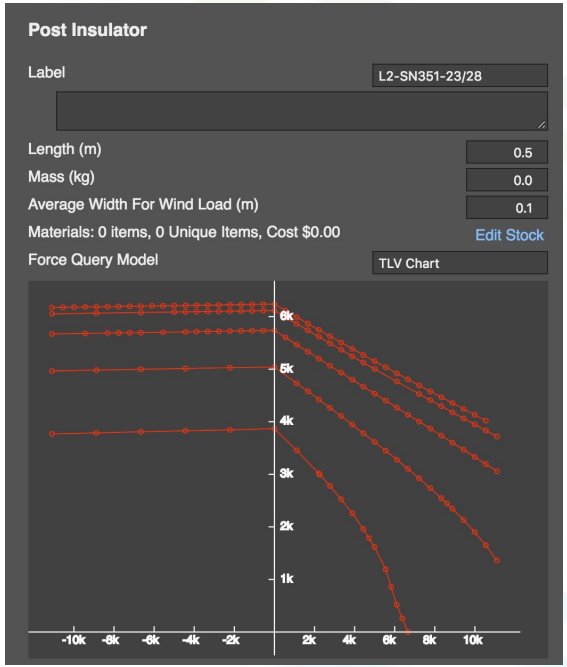

Blowout

# **Design & Modelling**: Clearance-checking w/ LiDAR

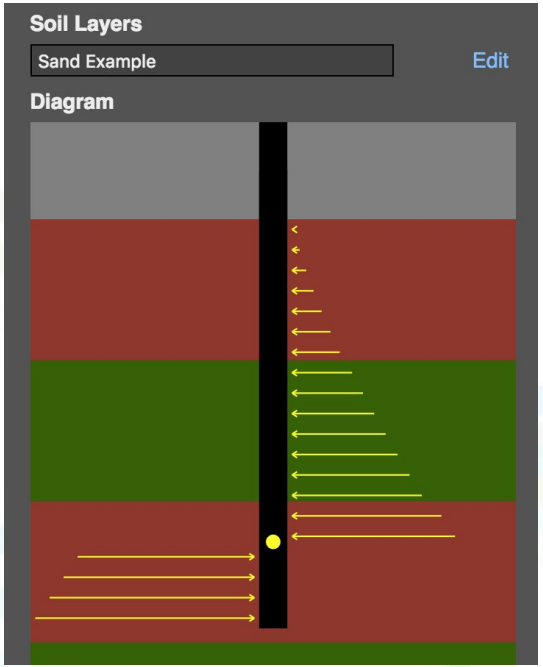



Clearance violations are shown and updated dynamically as the user modifies their line design

# **Design & Modelling**: Strength & Foundation

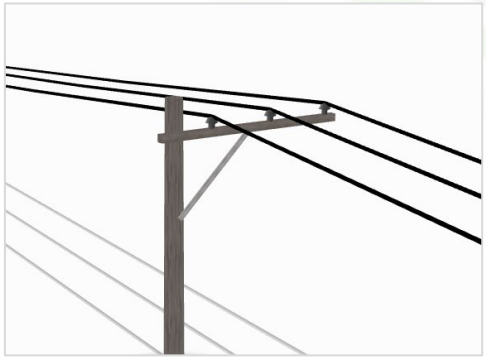


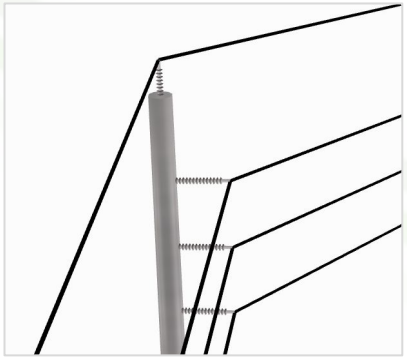

Insulator strength charts

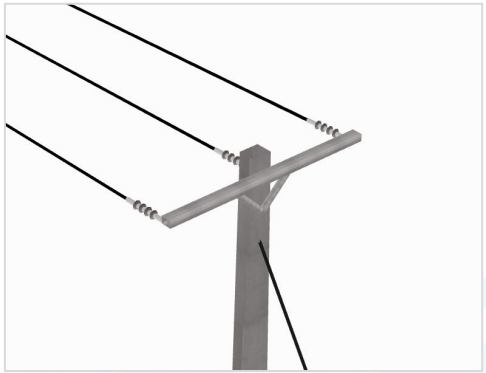


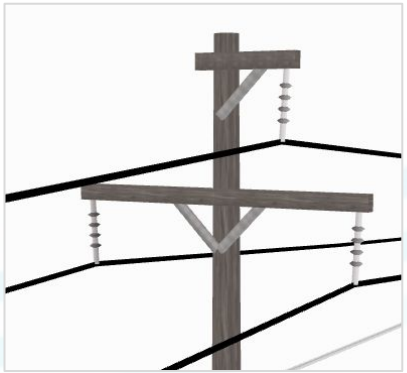

Foundation analysis

# **Design & Modelling**: User-customisable Libraries









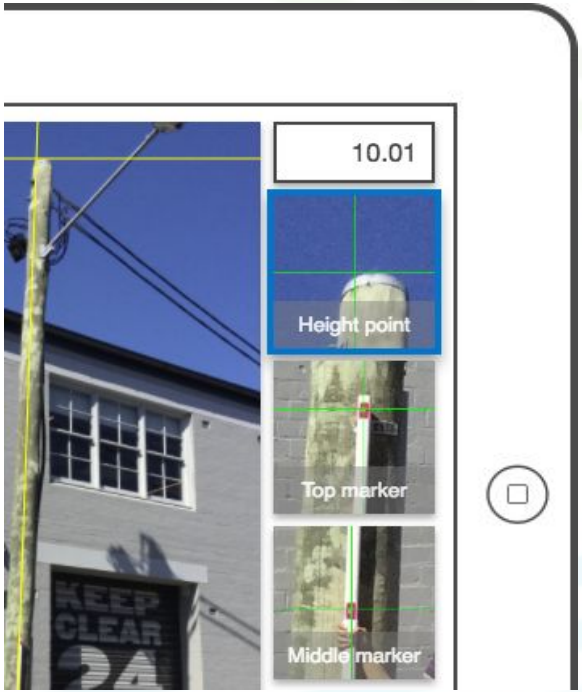
- Poles
- Cables
- Constructions
- Insulators
- Soil types
- Stock components / prices
- Load cases
- Clearance rules

# **Design & Modelling**: Import / Export

***Today - an array of interchange formats***

- **LiDAR** 100M+ points in-application,
  option to host TB's in the cloud or connect to customer data
- **DXF** (GIS, Survey, Plan, Profile, Schematics)
- **CSV** (Survey, Libraries, Eng Reports, Bill of Materials)
- **PDF** (Charts, Reports)
- **MapInfo** (GIS)
- **SHP** (GIS)
- Direct integration with other systems via APIs / protocols

# **Asset Management**: Supplemental Survey

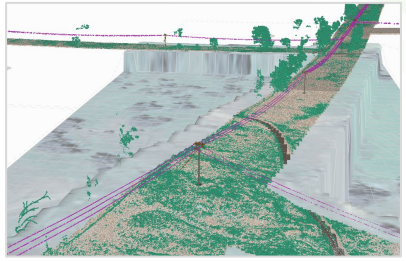



Camera + automatically detected calibration markers allow simple surveys without requiring expensive equipment

# **Asset Management**: Survey & Pole Assessment

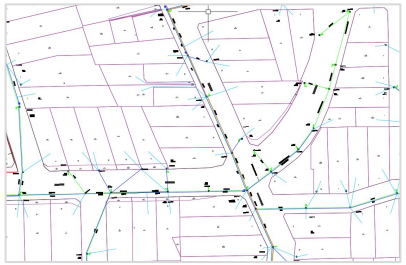
- Model on the desktop, adjust in the field
- Assess poles more accurately given knowledge of the model (and hence design loads)
- Or capture as-built record with calibrated images
- Push assessment results back to cloud

# **Asset Management**: Auto-gen. model (GIS + LiDAR)



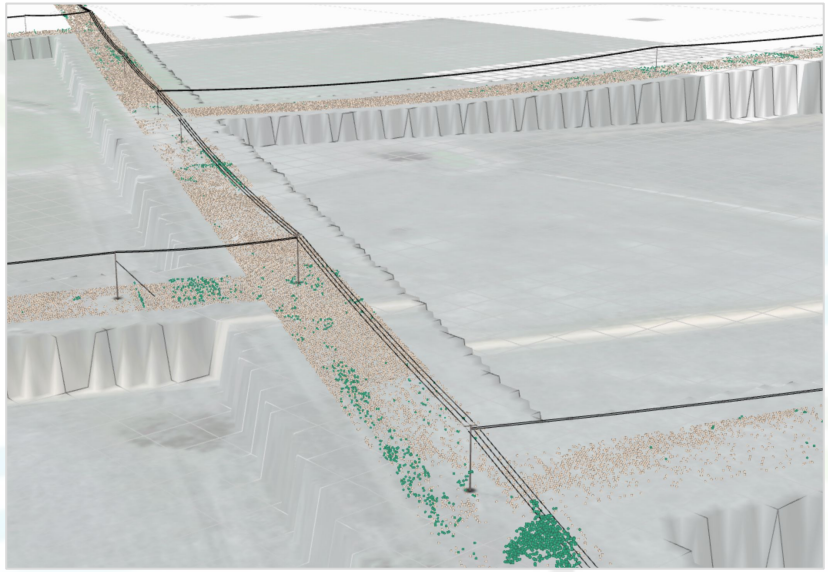
LiDAR

+

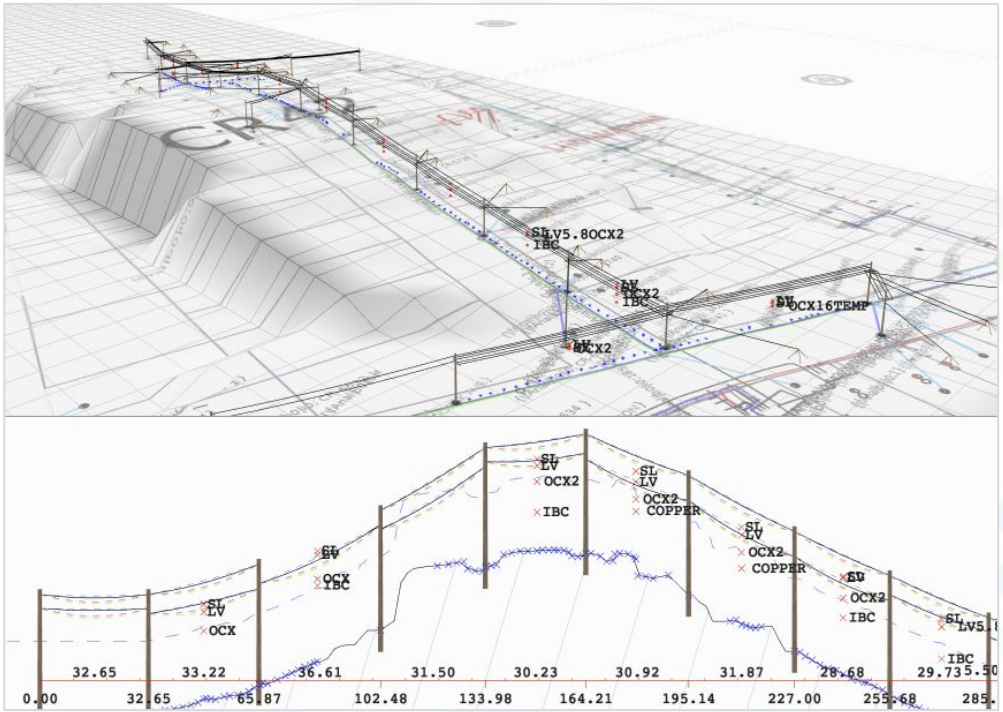


GIS Data

Network model automatically setup

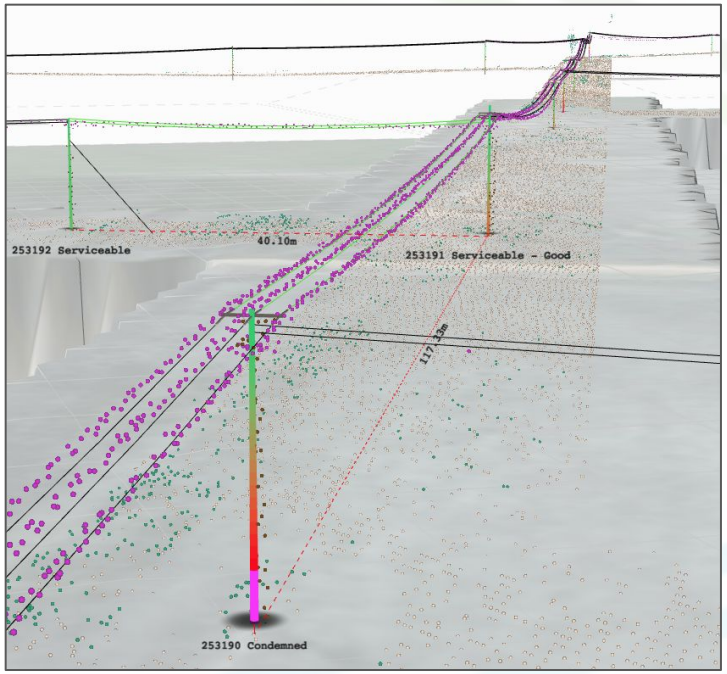
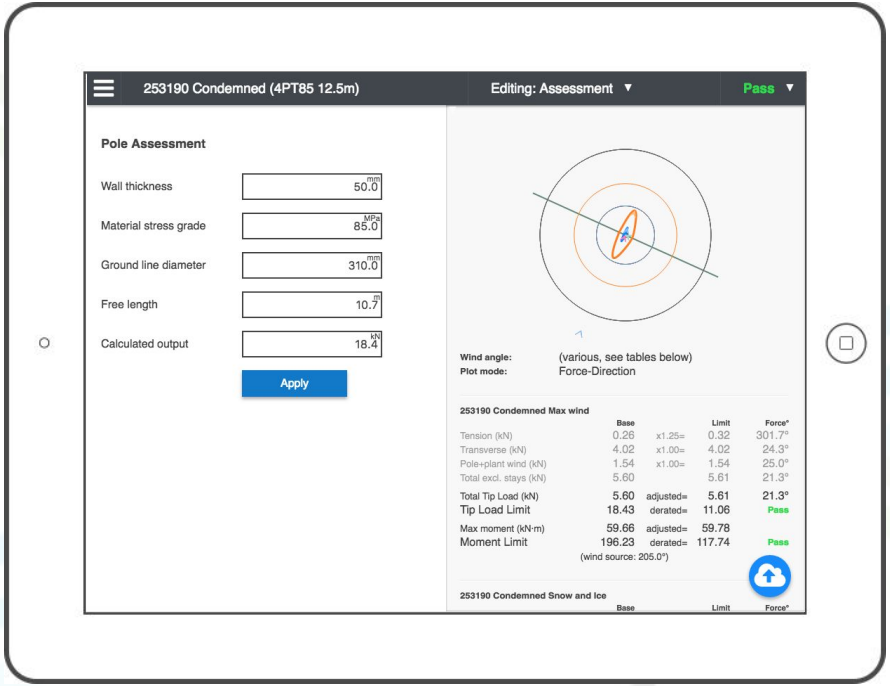


# ...or survey data, heuristics, ...




Designs can be rapidly bootstrapped by combining and merging multiple data sources

(In this example, GIS extract and survey data)

# **Asset Management**: Pole Assessment

## More accurate decisions based on actual pole loadings