

3D Design and Modelling of Substations

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Contents

- Introduction
- 3 Steps of Design
- Problems and Solutions
- The future
- Wrap up and Questions

Introduction

Recent Graduate

Worked at Beca for nearly 2 years

Worked on some neat projects





✓ Design Process



Inputs

Design

Outputs

x What Can Go Wrong!

.....A LOT ACTUALLY!!!

- Incorrect inputs
- Incorrect design procedure
- Human error
- Miscommunication in the Outputs
- Bad records
-
-
-



How the customer explained it



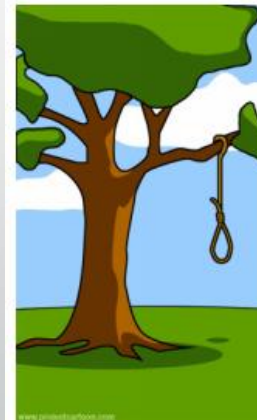
How the project leader understood it



How the analyst designed it



How the programmer wrote it



What the beta testers received



How the business consultant described it



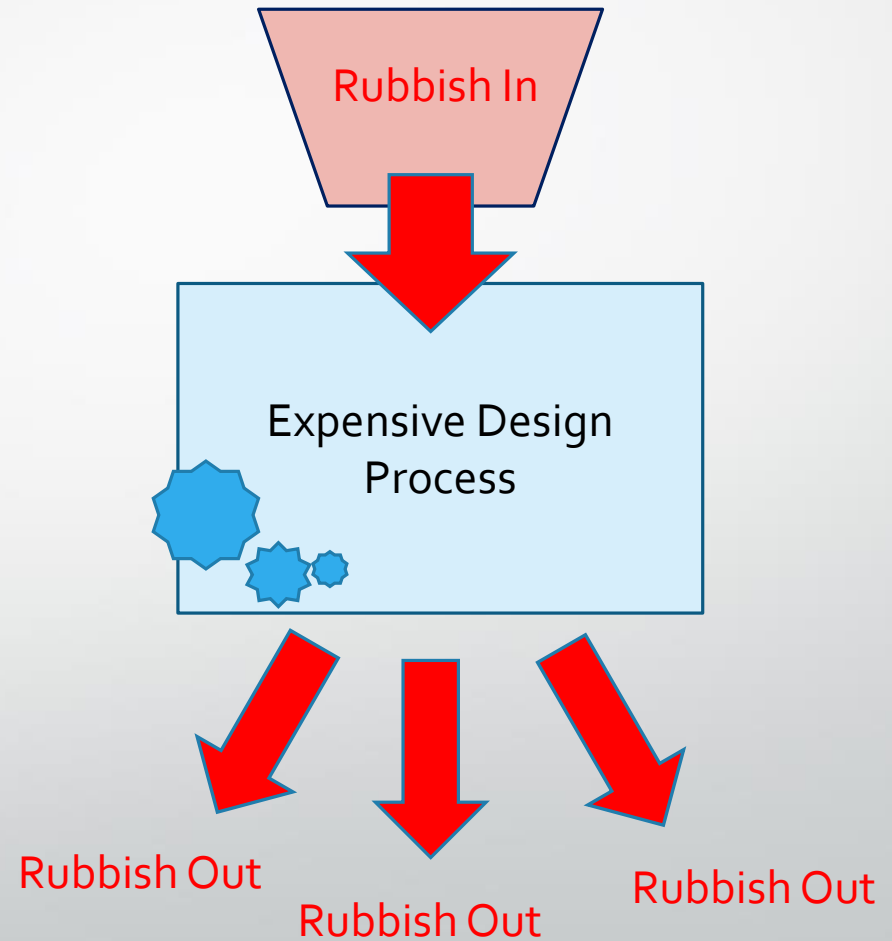
What marketing advertised
iSwing

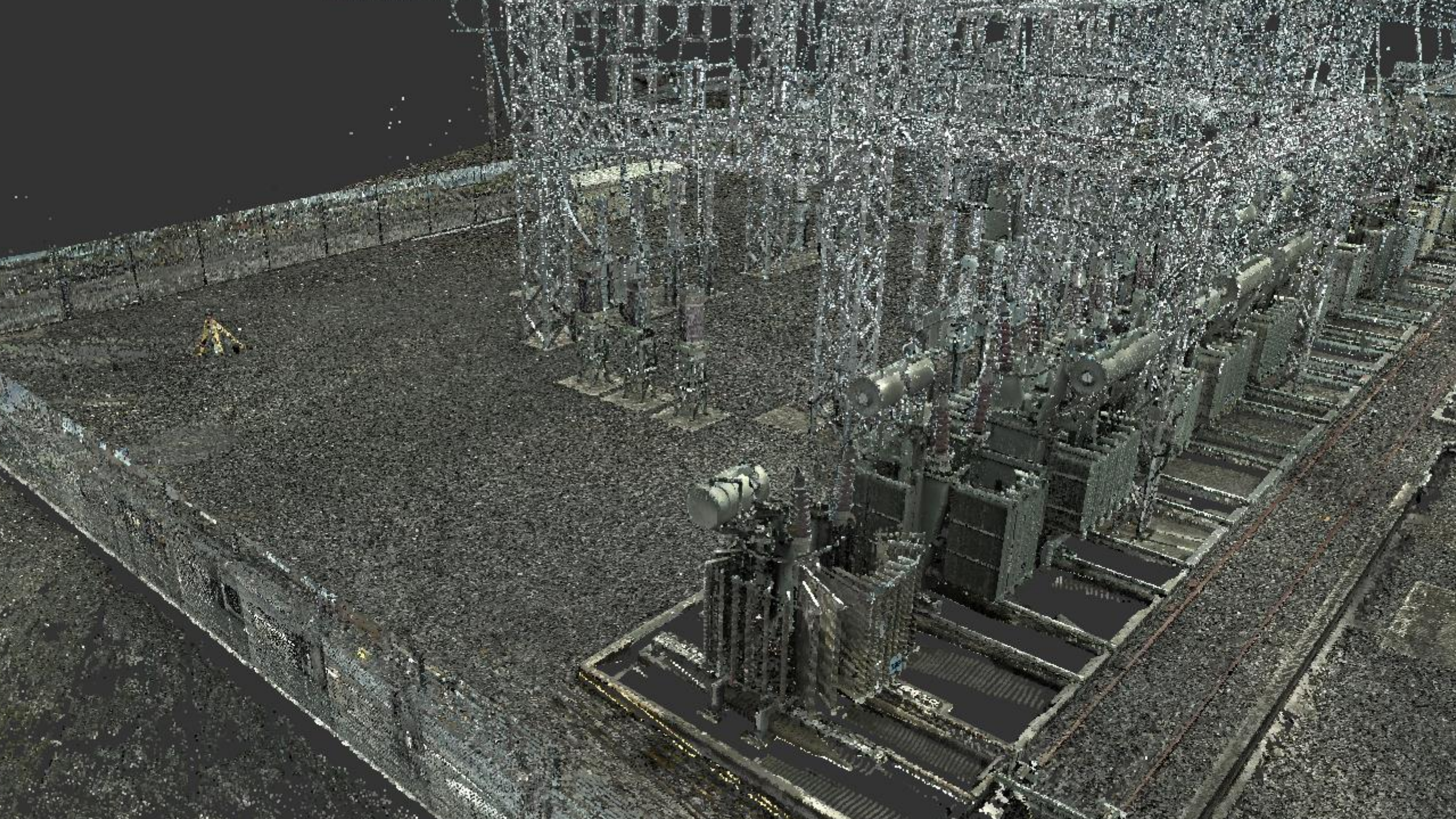


What the customer really needed

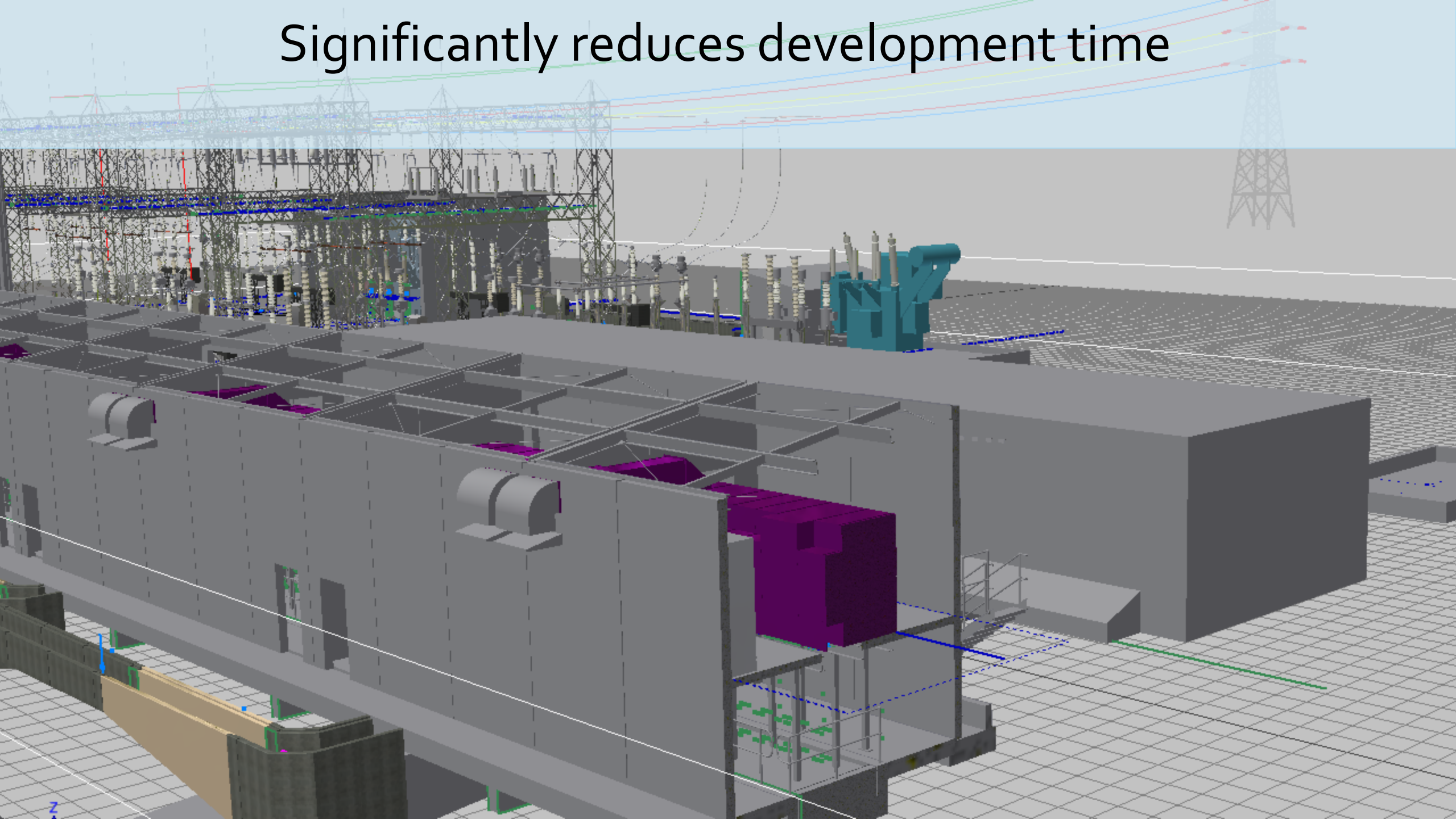
Problem : Incorrect inputs

- Remove Human error
- Repeatable measurements
- Time/ Cost problem
- Solution => Point Clouds





Significantly reduces development time

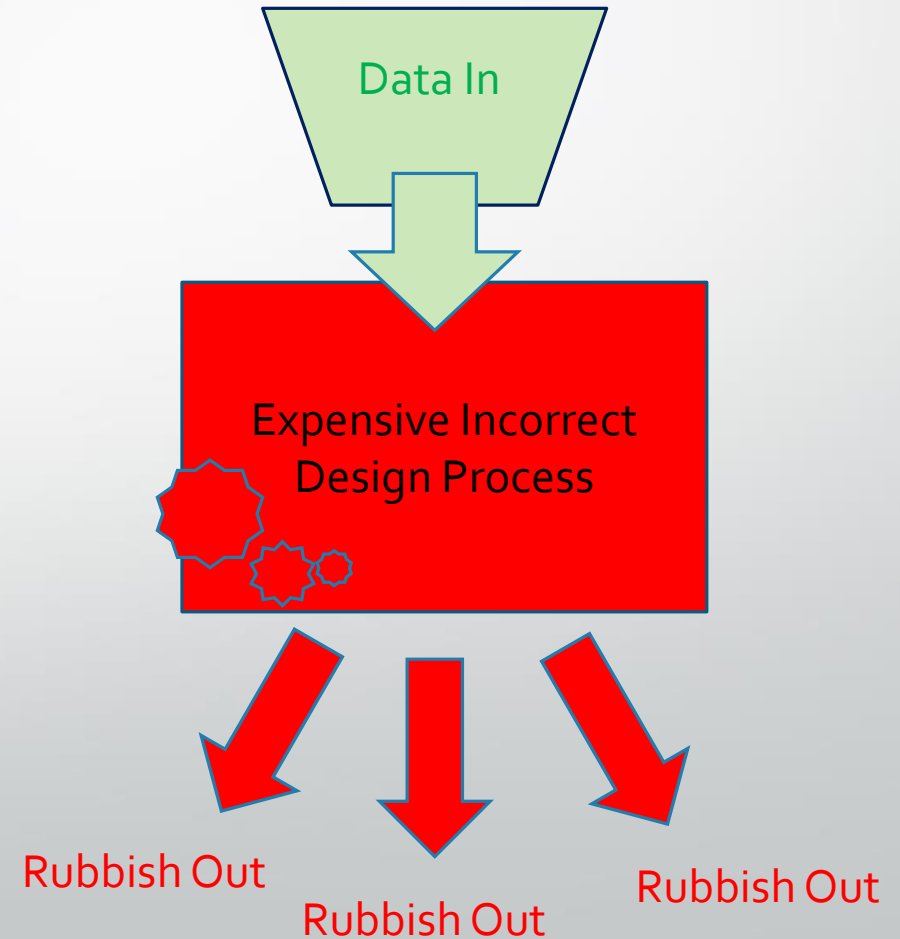


Demo Video – Tying it all together

- <https://www.youtube.com/watch?v=wlgixyCCYDs&feature=youtu.be>

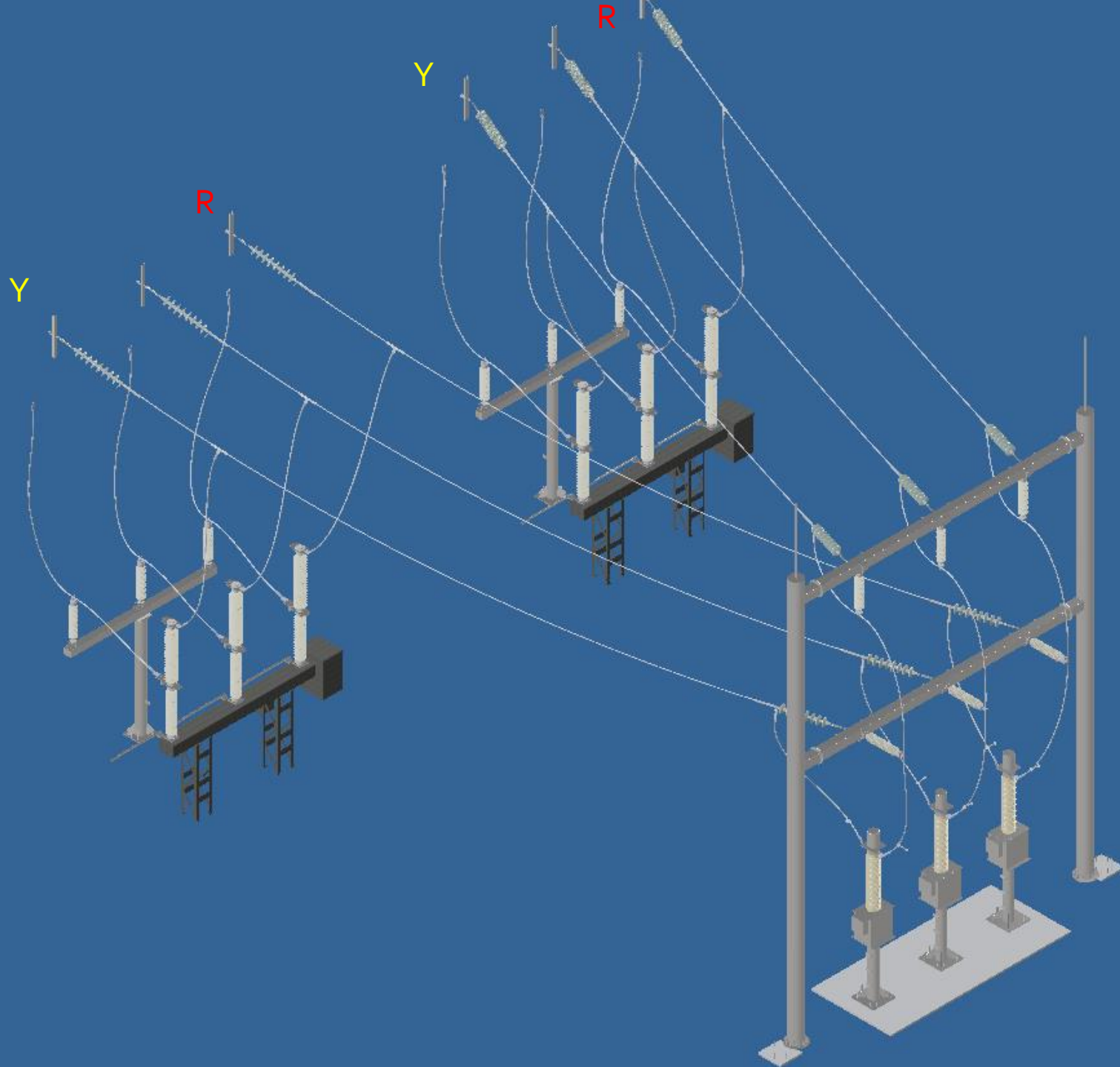
Problem: Incorrect Design Procedure

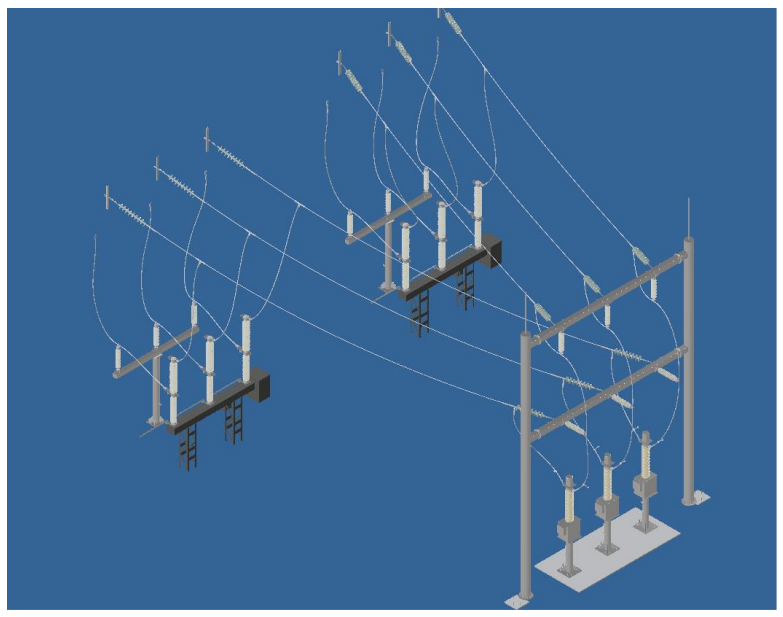
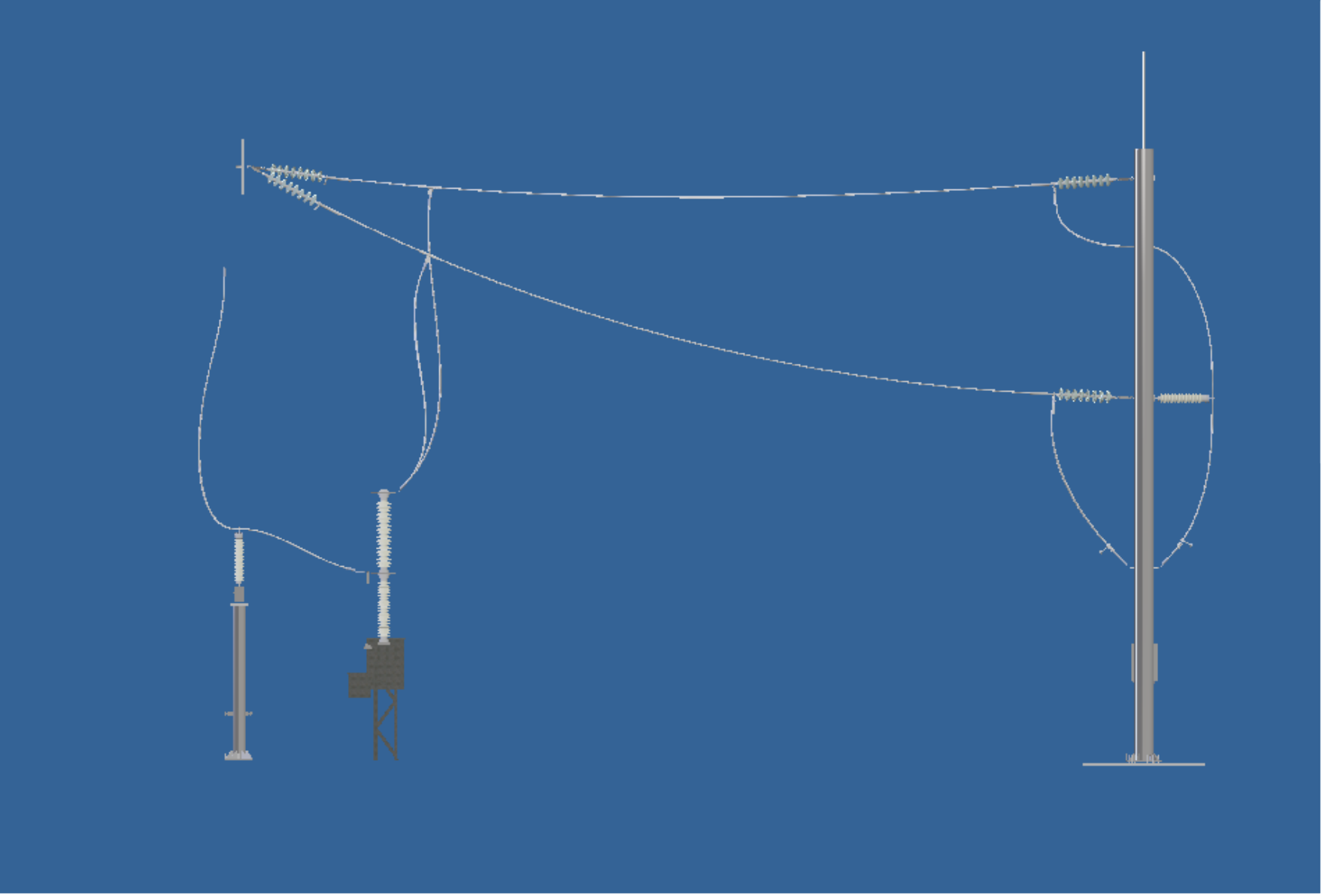
- Human Error
- Unknown Variables
- Assumptions

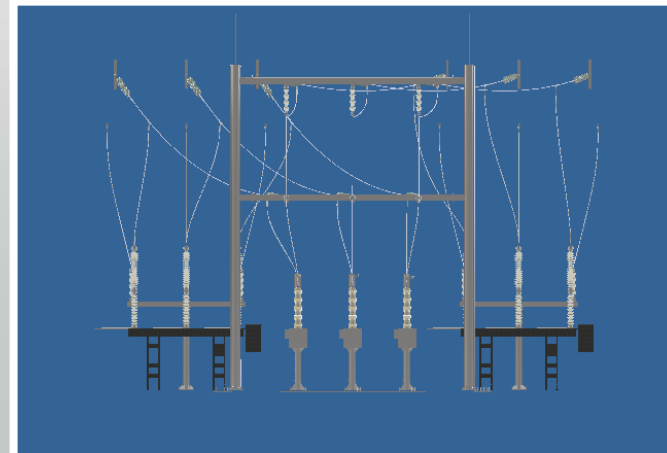
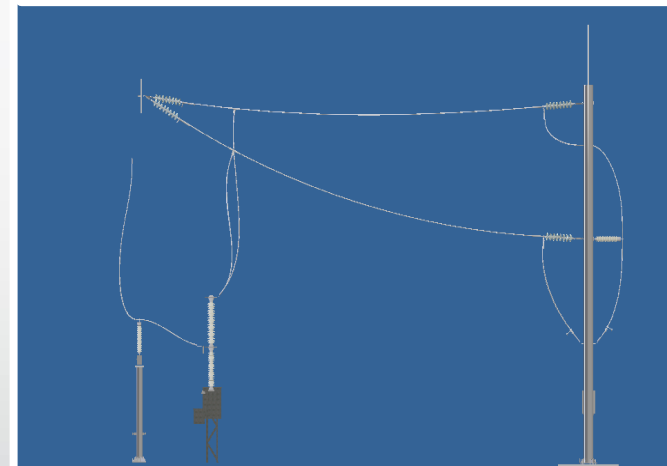
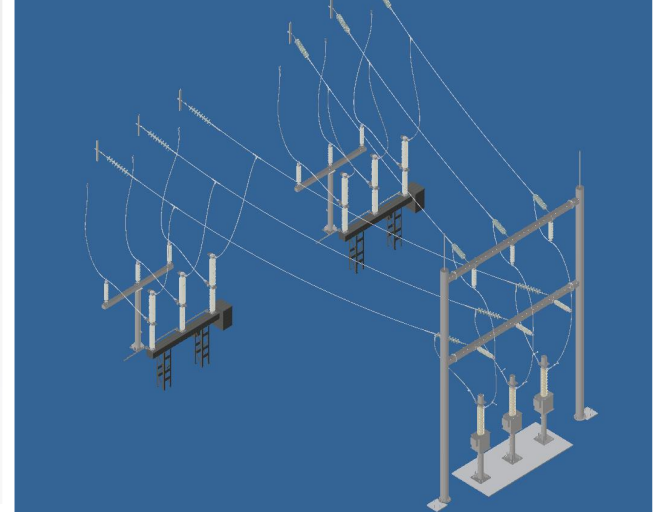
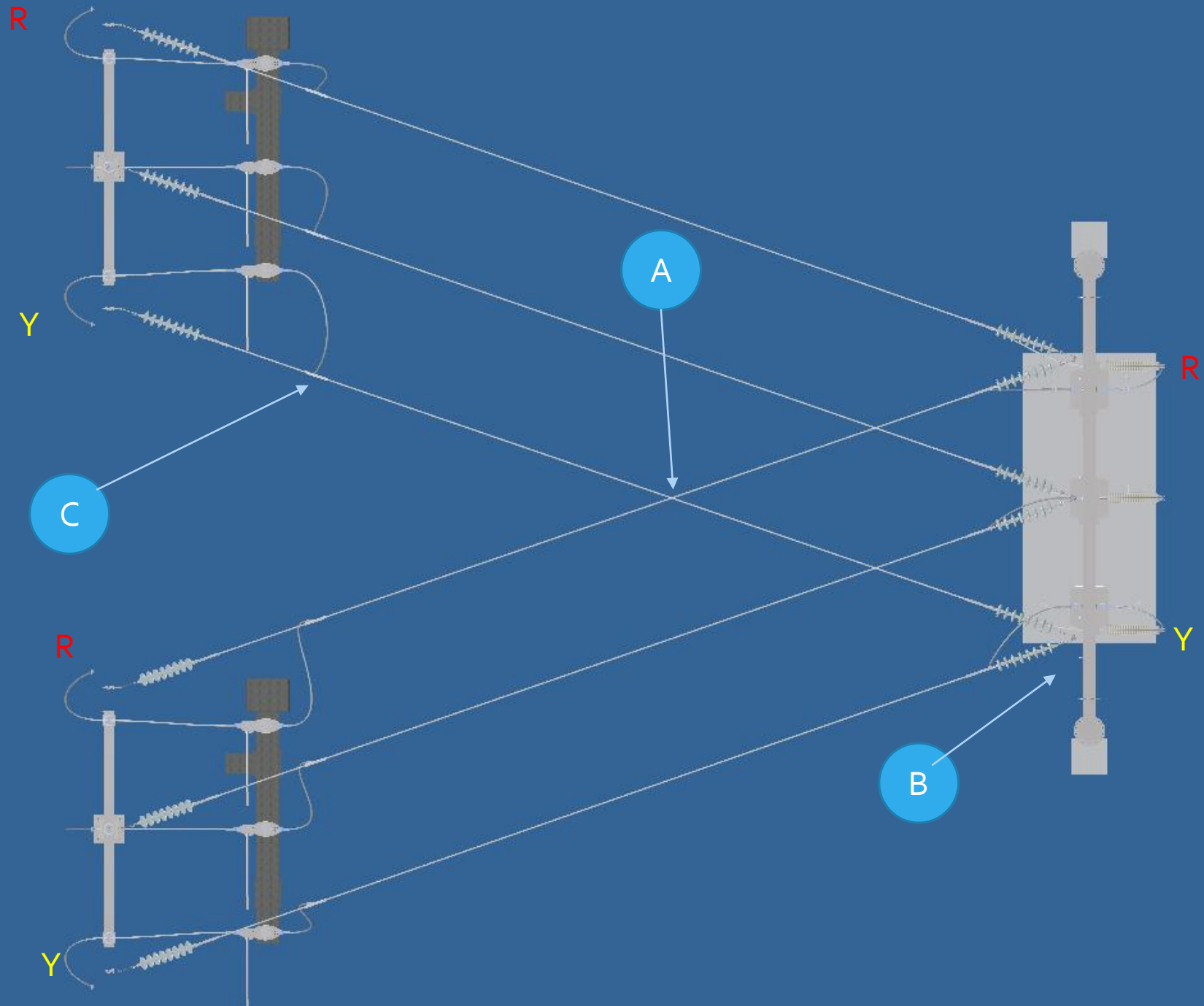


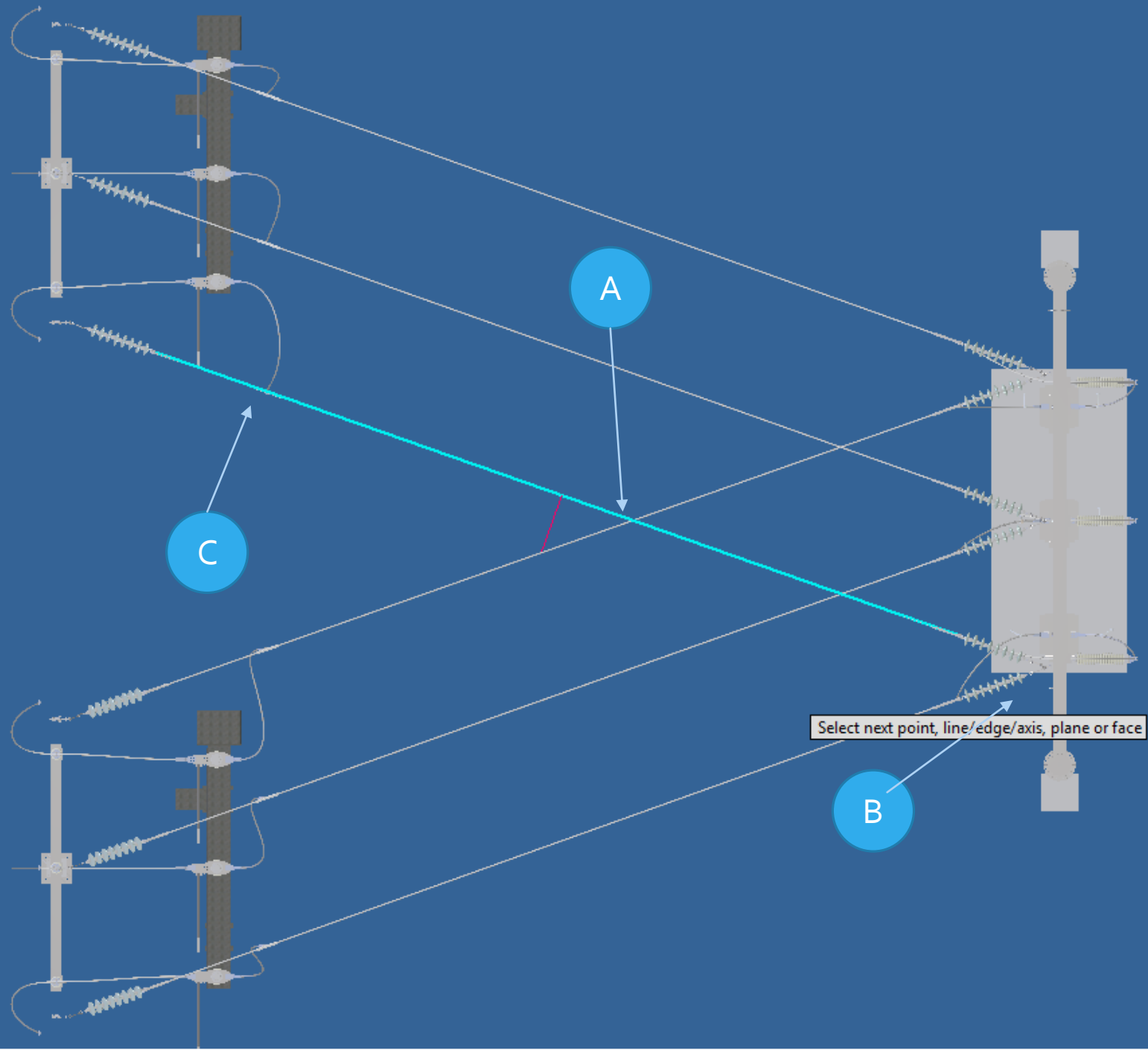
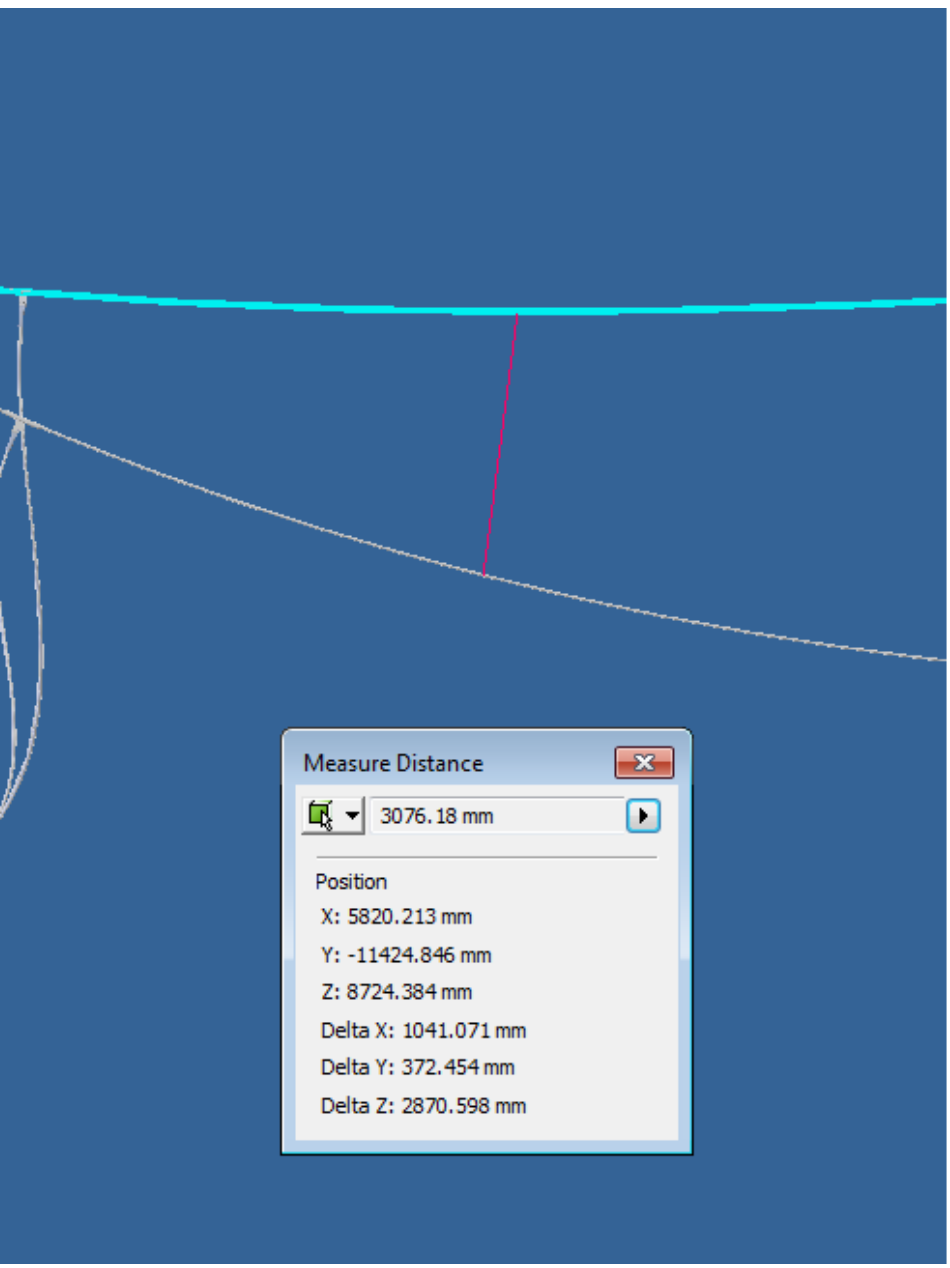
Robust Automation

- Can you visualise “1600 mm”
- 2D Drawings are hard to interpret
- Computation analysis is rigorous to the core



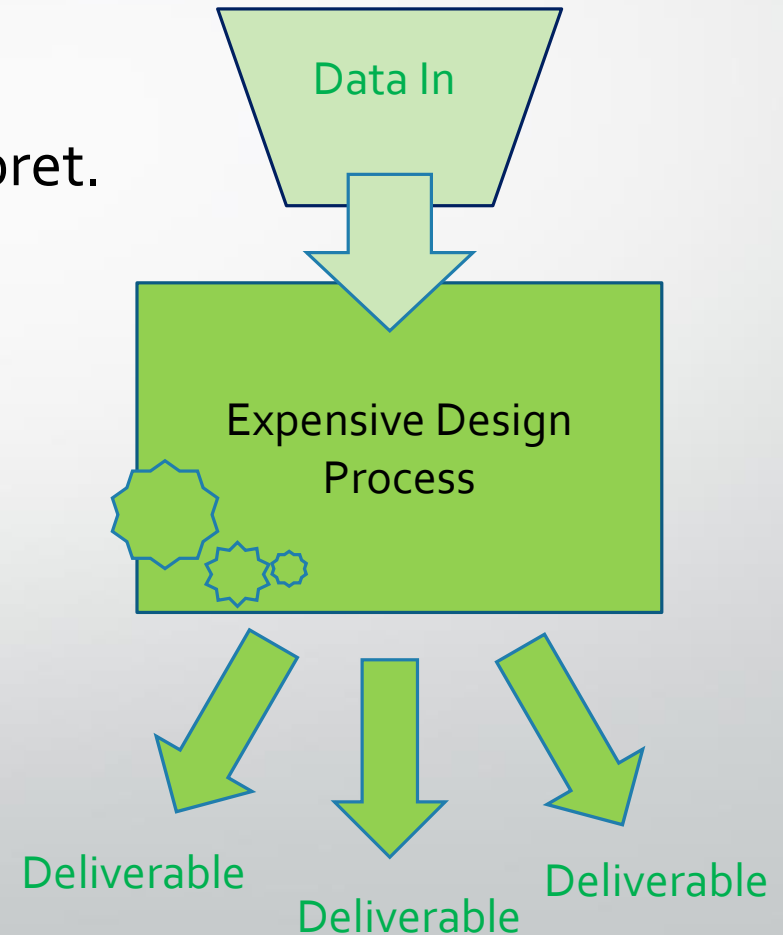






Problem : Miscommunication

- Deliverables are incredibly easy to misinterpret.
- Client is un happy with the outcome
- Issues arise after construction has began.





VR in Practice

- 3D model was exported to AutoDesk Live
- HTC Vibe headset + Steam VR.
- Really Good at Immersion.
- Identify Errors before they become a problem!
- Other issues

Example of 3D technologies

- <http://pano.autodesk.com/pano.html?url=jpgs/67236e62-6883-47f2-8996-b11696e22ffe>

The Future

- Data is forever.
- BIM – Collecting and storing data
- Other Applications – Training, Maintenance, Record keeping....etc
- The world is changing. Keep up or get left behind
- <https://www.youtube.com/watch?v=3KGRd7shcGs&feature=youtu.be>



Any Questions?

BECA

- All Images from Previous slides are projects that I have personally worked on.
- Looking to Implement BIM into Substation Modelling
- Developing new tools for Virtual reality engines