

# Adoption of Digital Twins and Outcome-Based Policies to Bridge the Building Energy Performance Gap



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Significant variations have been noted between energy predictions at the design stage and actual energy consumption once a building is operational. This difference is termed the Building Energy Performance Gap. In spite of much work, there is not yet a clear answer to whether the BEPG is narrowing or widening, nor is there a proved method to bridge the gap.

This PhD research will extrapolate all possible root causes of BEPG and explore the potential of digital twins and outcome-based policies to mitigate the gap related to all underlying factors contributing to the BEPG.

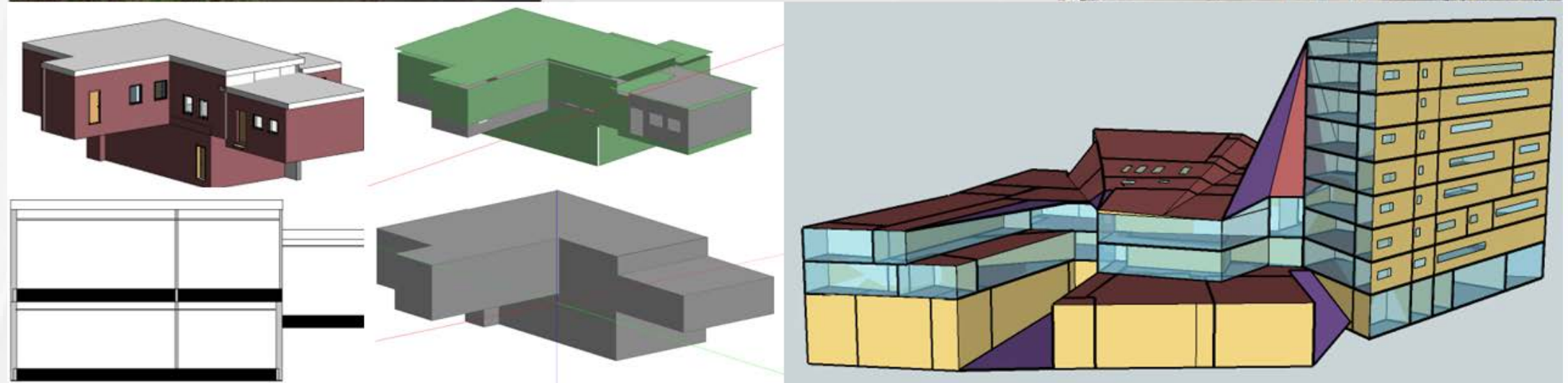
## Supervisors

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WHAT ARE THE UNDERLYING FACTORS OF BEPG? AND WHAT ARE THEIR ORIGINS?



- Is it the inaccuracy of the BIM model that led into unreliable Energy Predictions and later Energy gap?
- Inaccuracy of BIM model is solved and accurate energy model is created successfully. But...
- Significant energy gaps are observed.
- What are the root causes of the gap? and who is accountable?



BIM and Energy models adapted from work done by Professor Pieter De Wilde and Khaleel Odeh for two case studies: Porter Lodge (left) and Roland Levinsky Building (right, adapted with permission from Professor Pieter De Wilde)