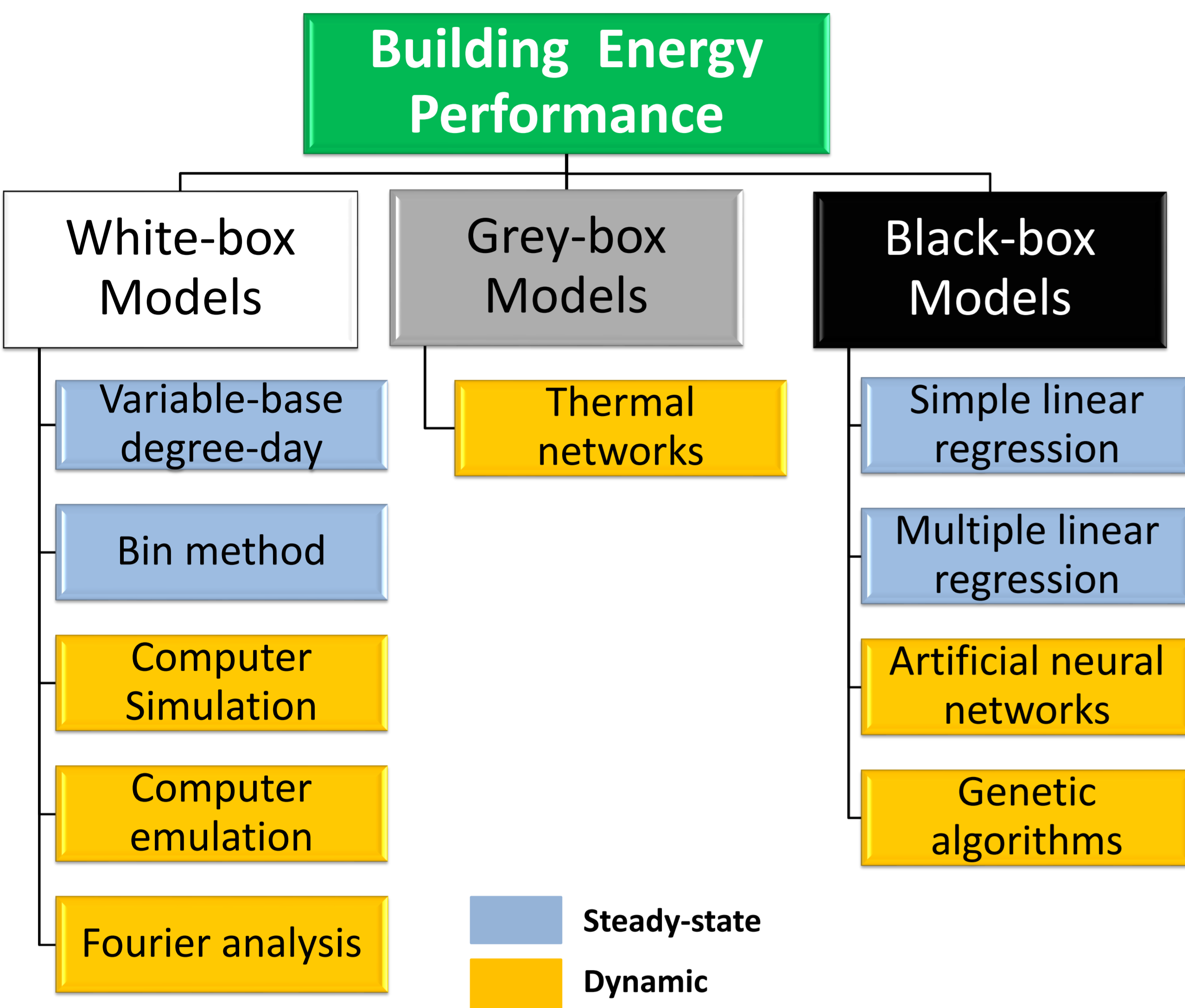
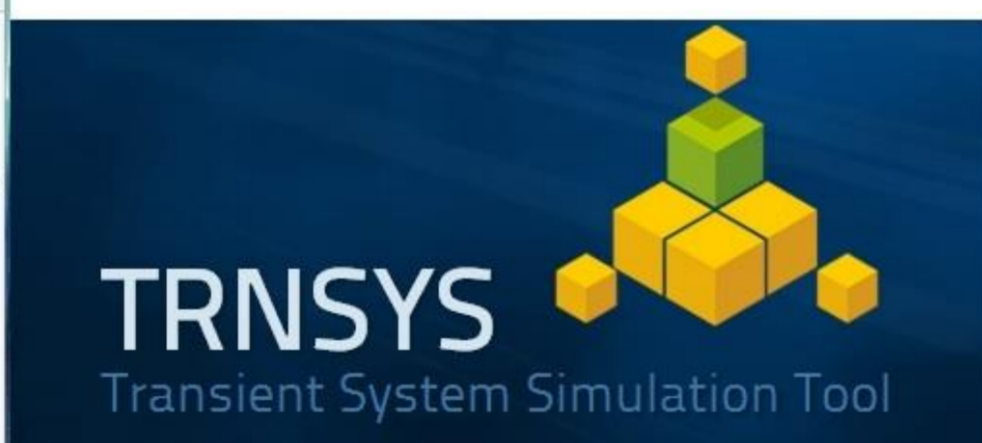
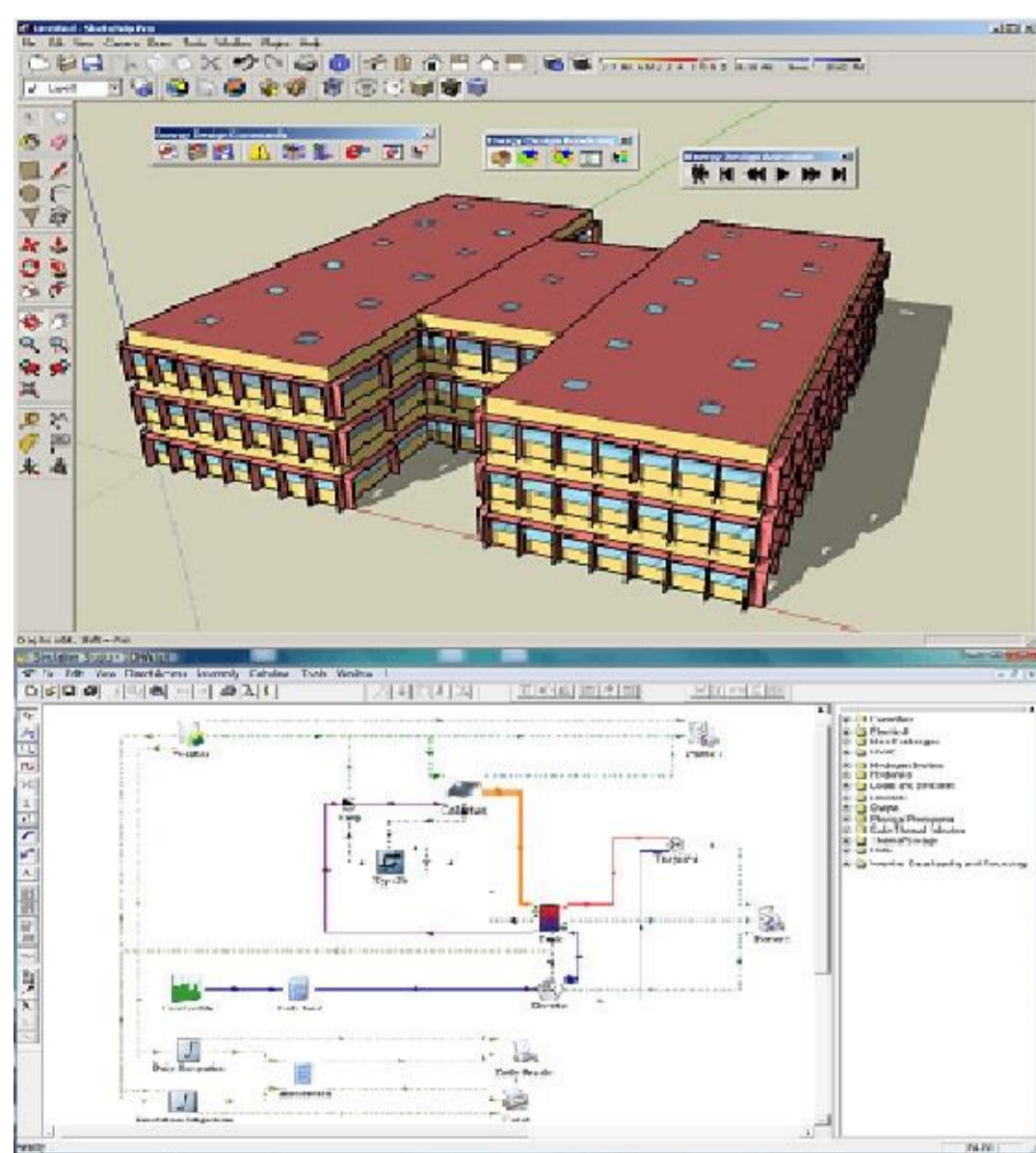


## INTRODUCTION



### White-box Models:

#### Dynamic Methods



#### Static Methods

- Degree Day method
- Bin method

### Grey-box Models (Hybrid methods):

- + Need of limited number of data
- + Rough description of geometry and thermal parameters is sufficient
- Difficulties for users to understand

### Black-box Models (Data-driven methods):

- + Early stage of development
- Lacking generality

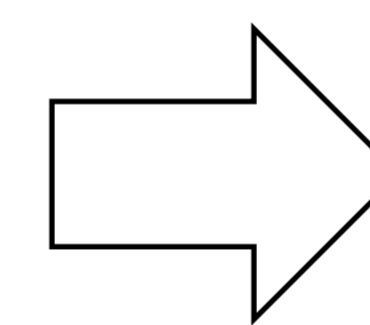
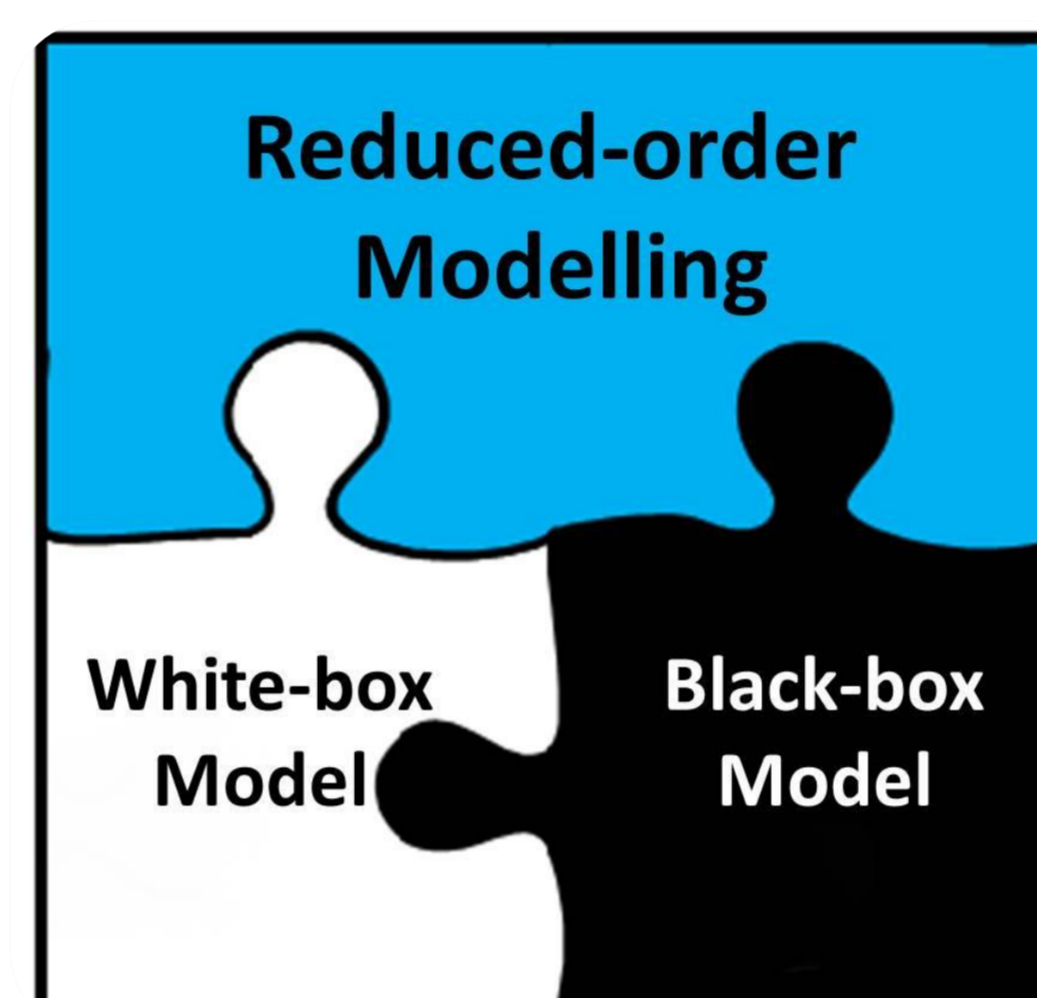
## RESEARCH QUESTION

Can historical building performance data be combined with novel reduced-order modelling techniques to determine building thermal load?

## OBJECTIVES

1. Development of a novel approach for cost-effective modelling of the thermal response characteristics of a building.
2. Combination of physics based and data driven approaches, within a reduced order modelling framework, regarding the techniques underlying the modelling methodology.
3. The new approach needs to be capable of being assembled rapidly, deployed easily with minimum commissioning and maintenance effort requirements.

## METHODOLOGY



## TESTBED BUILDINGS

Two buildings will be used in the project as test buildings, NIMBUS, CIT in Cork and SLLS, UCD in Dublin.



NIMBUS, CIT, Cork



SLLS, UCD, Dublin

Both buildings are fully monitored using advanced sensors and meters to record and control thermal comfort conditions throughout and HVAC performance.

## FUTURE WORK

- Extensive Literature Review
- Data collection from testbed buildings
- Development of the new methodology
- Implementation of the new methodology using the testbed buildings as reference cases

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