



## Learning from Australia: how better modelling can help close the performance gap

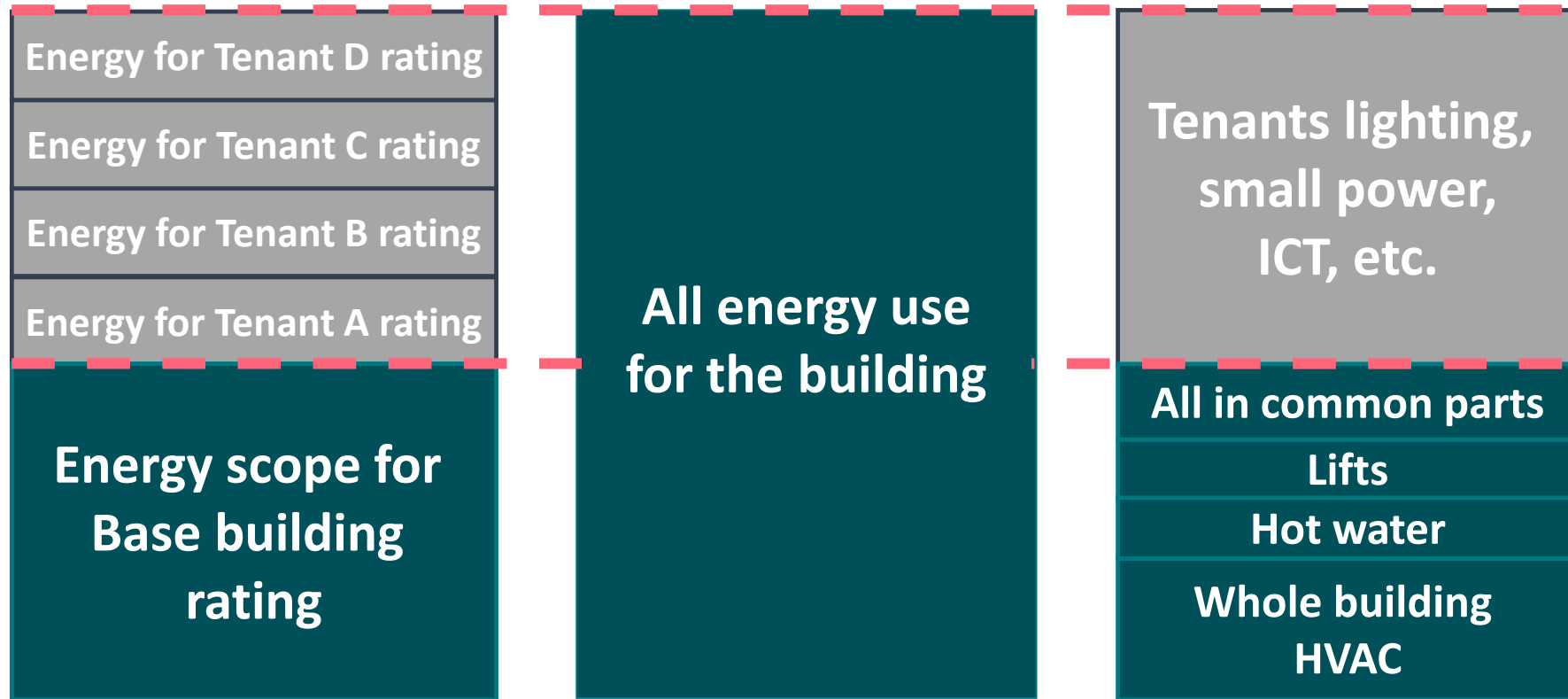
**Presenter:** Robert Cohen  
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Advanced Building Systems Modelling  
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Confidential

**By following the process in a NABERS Commitment Agreement, Australian teams can now routinely achieve in-use operational energy performance ratings in line with the predictions of design stage models**

# Delineating a suitable metric for building energy efficiency



By delineating, measuring, rating and disclosing base building operational energy performance, the base building rating expressed as NABERS stars has become a KPI for all stakeholders, FM to FD

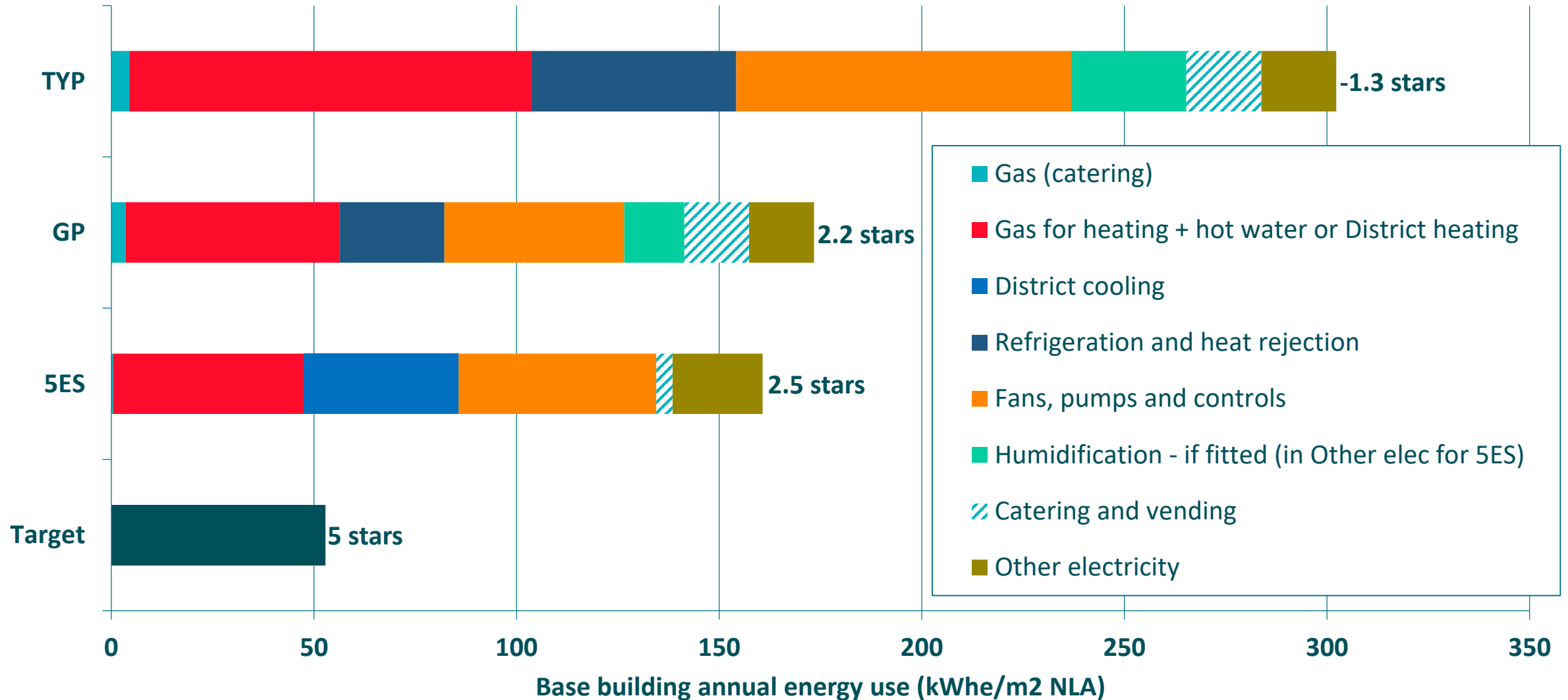
# What has been achieved in Australia (new office buildings)



# How does new build in the UK compare with Australia?



# DfP pilot study: measured annual performance vs modelled target and industry benchmarks



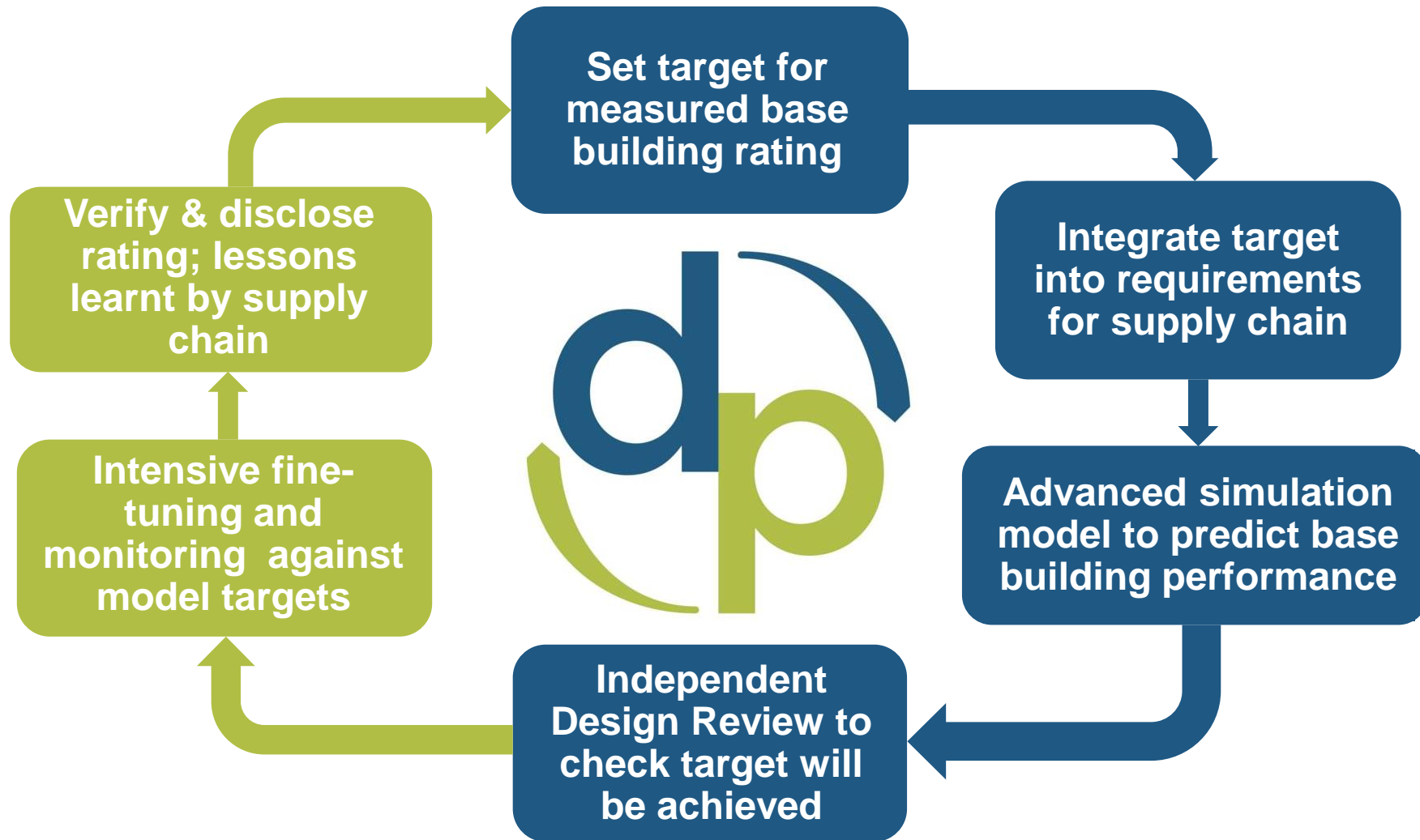
# Factors behind change

# What has been transformational in Australia 1 of 2: Market asks for and values performance





# What has been transformational in Australia 2 of 2: Commitment Agreements and Design for Performance



## Delineation

enables unfettered agency for whole supply chain to pursue achievable outcome

## Transparency

through measurement and disclosure - entrains all stakeholders into endeavour

## Accountability

Owner commits to target

Landlord takes control of operational levers to deliver target

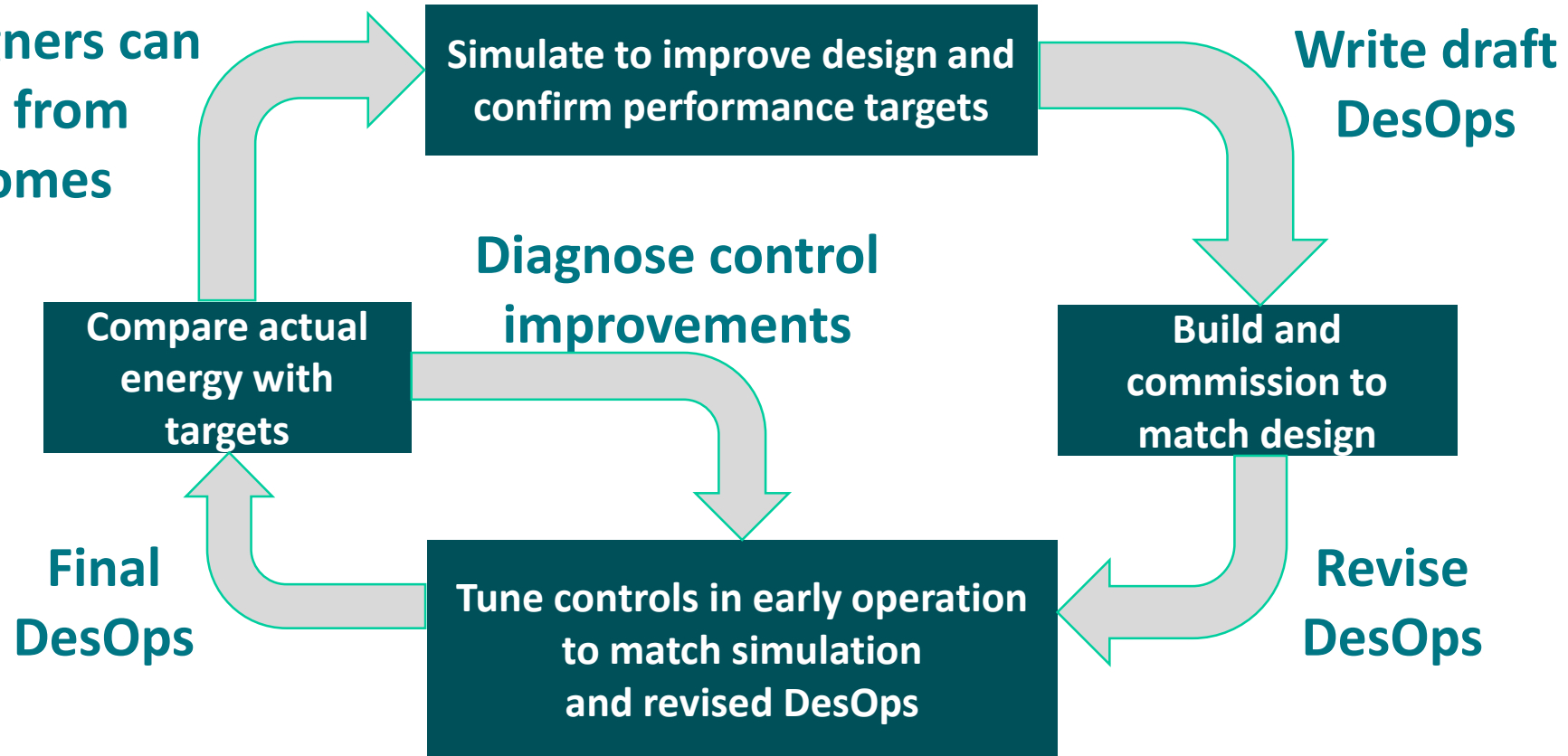
Occupiers obtain the quality of building they asked for

# **Advanced Building Systems Modelling: Learning from Australia**

# Simulation helps check at every stage that the project is delivering the designed energy performance



Feedback so designers can learn from outcomes



## Confirm the performance target is achievable

Test ability of design to perform efficiently under non-standard conditions  
*To improve performance, we must target performance*

>>>> weather

>>>> hours of use and occupant/equipment densities in each tenancy

>>>> voids

>>>> all of the above

Strengthen resilience of design to whatever actual operational parameters might occur

Test benefits of “advanced” control strategies and select

## Empower designers to specify more optimum plant capacity

Just because we don't know about future operation, doesn't mean we shouldn't explore

Off-axis scenario analysis producing load duration curves can create greater confidence to reduce plant capacity contingencies

Importance of avoiding wasteful over-capacity is doubly important in a net zero, resource constrained world

## Defending design intent during RIBA stages 5 - 6

**Resisting VE which undermines performance**

**e.g. Proving the value of more sophisticated controls**

**Oversight of tenant fit-out proposals**

## Underpinning commissioning, tuning-up and M&V activities

Model creates collateral which identifies to all parties what should happen which can then be verified by detailed measurements

O&M teams can tune the actual building (BMS) to the simulation

M&V teams have monthly targets (budgets) for each sub-meter, can track progress towards achieving rating and identify remedial measures where necessary

Performance feedback to original designers will improve their next design  
*To improve performance, we must measure performance*



