

Building Performance Evaluation

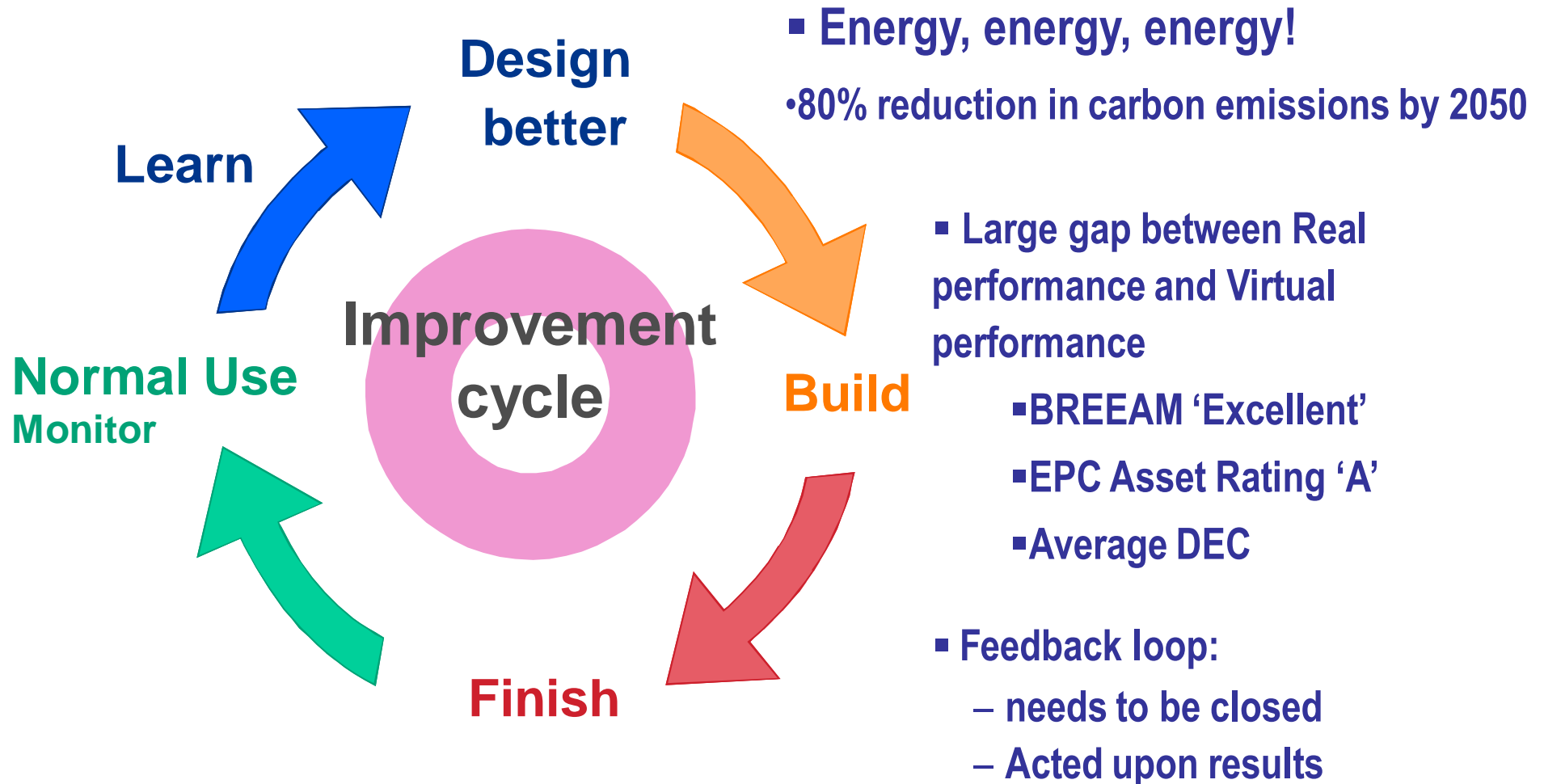
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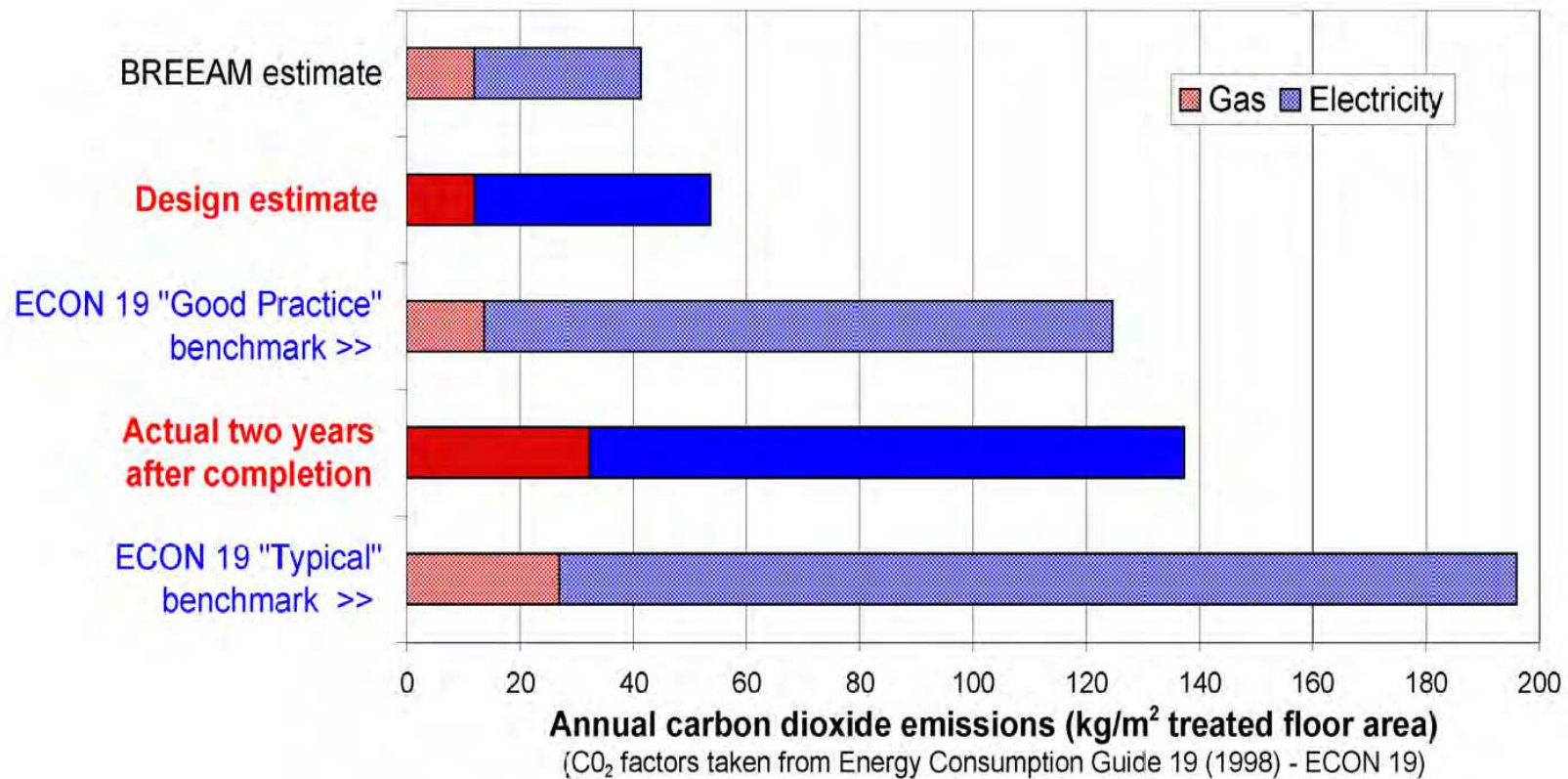
Support of KTN – BSRIA, ARUP, BRE & CIRIA

•Why Evaluate Performance?



Credibility Gap between Virtual Performance & Real Performance

Data from a winner of a Green Building of the Year Award 2004



SOURCE: data from S Curwell et al, *The Green Building Challenge in the UK*, Building Research & Information **27** (4/5) 286 (1999).

What is Building Performance Evaluation?

- **Evaluation of a building in use**
- **3 Areas:**
- **Forensic Walkthrough – inspection of building’s operation, and whether there are any emerging problems or wasteful operational practices**
- **Energy Survey – breakdown of energy use in building by type of consumption e.g. heating, air conditioning, lighting etc.**
- **Assessment of occupant satisfaction – survey and interviews of building users**

1. Forensic Walkthrough

Common Lighting Problems



What is wrong with this picture?

Lighting could not be turned off



We have Automatic Lighting Controls



- Can waste energy if not set up properly
- Automatic presence detection means lights come on even when daylight is OK
- Daylight-linking technology - are light levels set correctly?
- What is timer set to? 5 mins to 2 hours

Metering



- What is metering strategy?
 - Are heavy use areas sub-metered – Server rooms, catering facilities
- Find the meters – difficult to read
- Sub-meters not reconciled with main meter
- If not measuring and monitoring – how ACT?

Building Management System



- **Too complex?**
 - **May require outside BMS engineer to adjust**
 - **Poor handover - not enough training**
- **How useful is it as a energy reporting or monitoring tool?**
 - **If not monitoring, how act?**

User Interfaces

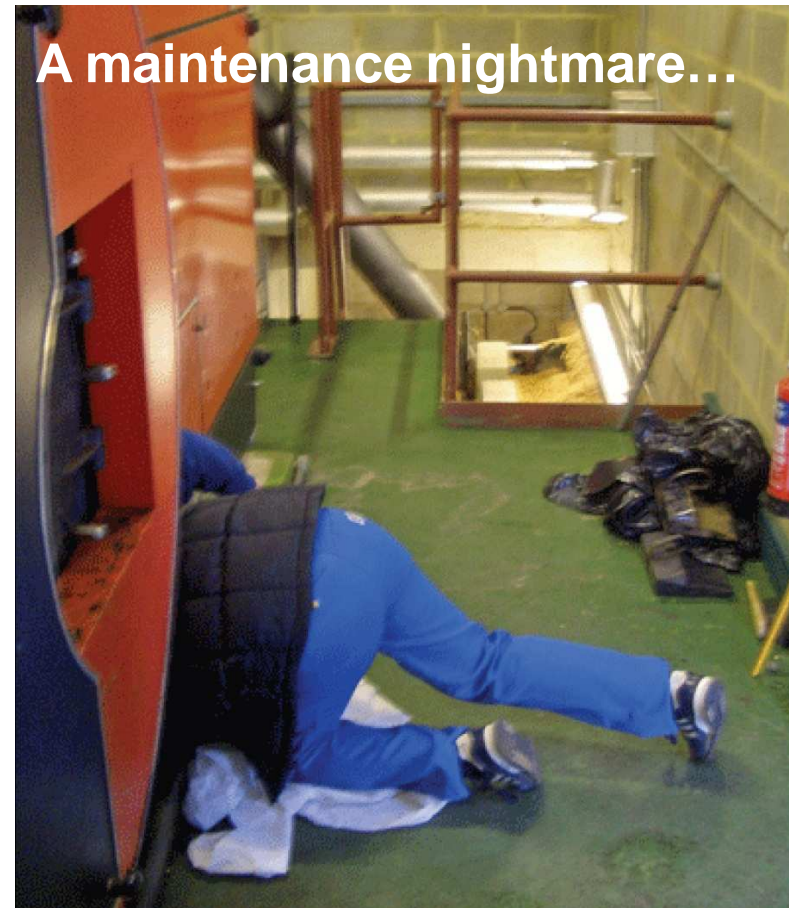


“An intelligent building is one that doesn’t make its occupants feel stupid”... Adrian Leaman

- **What are these controls for?**
- **Do users understand lighting or mechanical strategy?**
- **Underperforming controls**



Biomass Boilers



used as

re is the

ers or

Server Rooms



- What is room set point?
- Check air distribution strategy
- Rooms conditioned 24/7/365

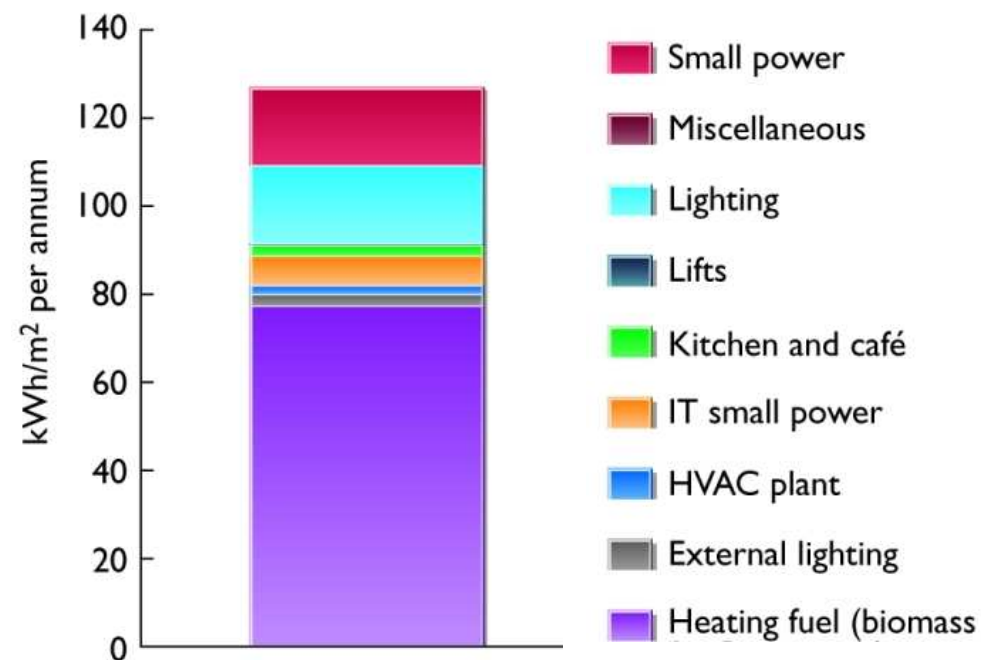
2. Energy Survey



CIBSE TM22:
Energy assessment and
reporting method

- TM22 can be used as tool
 - Review individual component loads
 - Find out run-times of loads
 - Build a load profile

- Measurement of HARD data
- Conducted at several levels:
- Quick assessments from energy bills and meter readings
- Extensive monitoring



3. Occupancy Satisfaction

- **Soft data - Collect feedback from building users about how well buildings work**
- **Structured interviews, surveys and questionnaires**
 - **Have user expectations been met**
 - **Are users comfortable**
 - **Insight into user behaviour**
 - **Do they understand the controls**
 - **Are they using them effectively**



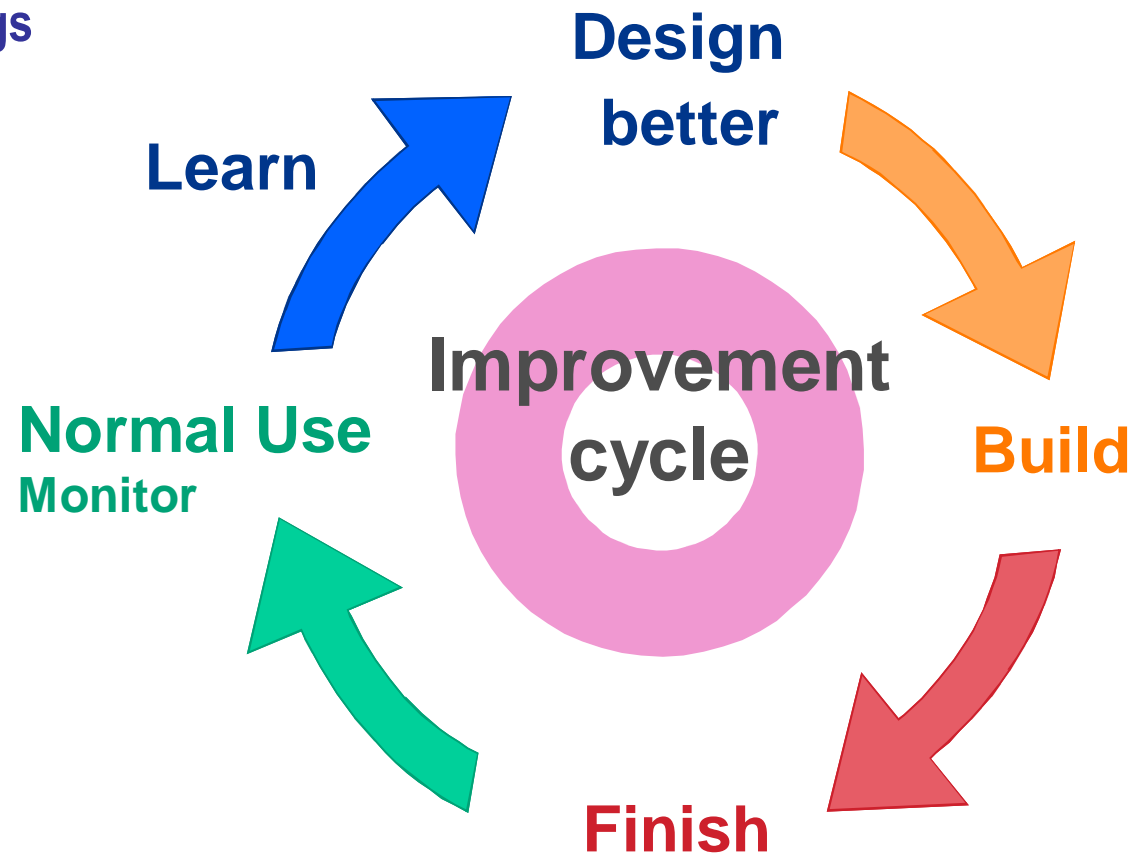
Building Performance Evaluation - Funding



- **£8m Technology Strategy Board funding – total four year programme**
- **Looking for applications from building developer or owner**
- **Competition open from May 2010**
 - **Assessment of applications at approx. quarterly intervals**
 - **Next deadline 12 January**
 - **41 Non-Domestic applications**
- **Any building that you might have available?**
 - **New build or major renovation**
 - **Within 9 months of completion**
 - **3 years maximum post completion**
 - **2 years energy data**

Summary

- Look to provide better buildings
 - In use and design
- With evaluation we can make informed changes
- Make feedback routine
- To embed a culture of building performance evaluation in the construction industry
 - More transparent



Building Performance Evaluation

- **Thank you for listening**
- **For independent building assessment**
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Technology Strategy Board www.innovateuk.org

Modern Built Environment KTN www.mbektn.co.uk