Measuring Building Performance: New Frontiers

Ecobuild Building Performance
March 8th 2018

Our Activities

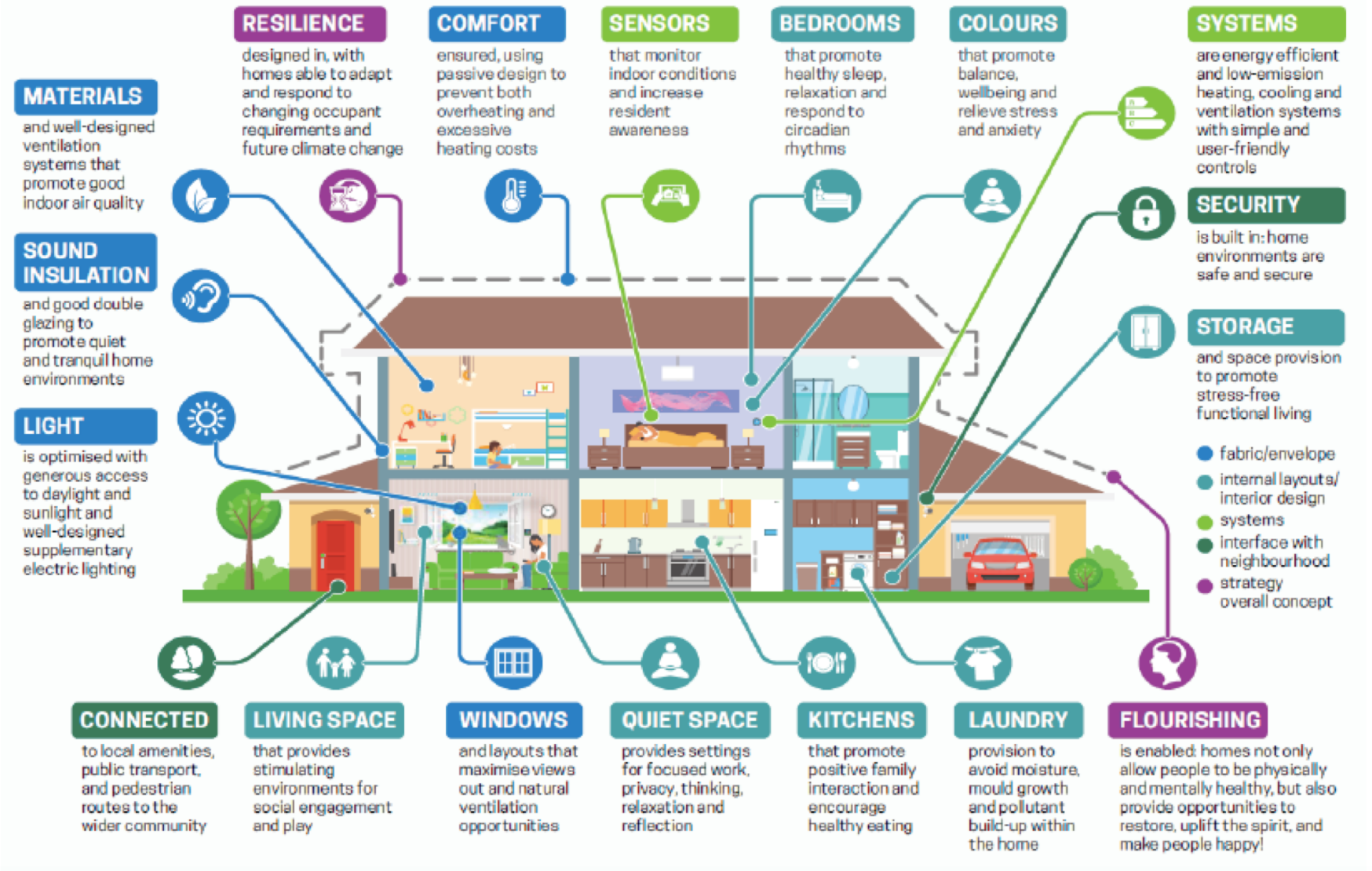
Introduction

- How we have measured and what we have achieved.
- Need for new methods
- What's driving the new methods
- What's happening now and in the future.

Performance Measurement

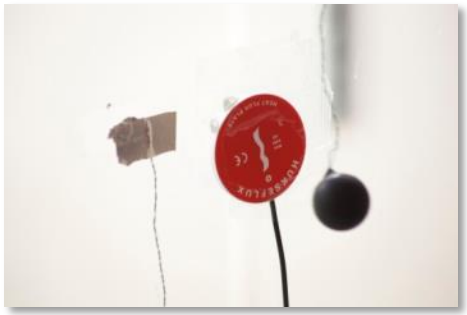
- Building performance underpins a lot of policy agendas – fuel poverty, energy, healthy homes.
- Buildings that perform well can drive value and positive outcomes for occupants.
- We have been doing this for some time and we have had some issues.
- Epidemeology vs pathology - scale
- Models vs data - performance gap

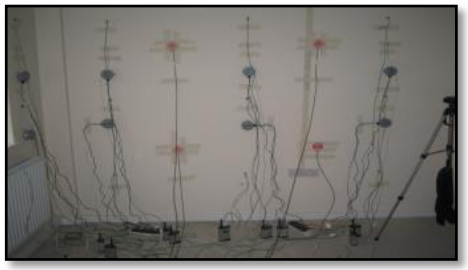
Figure 1: What makes a Healthy Home?

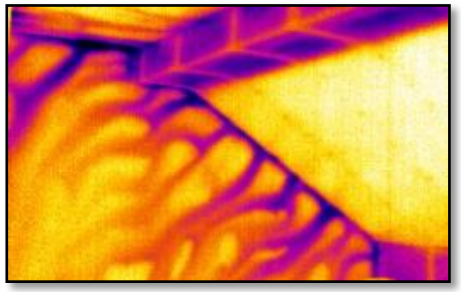


Source: Green Building Council, Healthy and Wellbeing in UK Homes, 2016.

Some Current Tools







Performance Measurement

- Coheating
- U Values ISO 9869
- Airtightness
- Environmental monitoring
- Energy consumption
- Tracer gas – indoor air quality

- However – this work can be difficult – lost comms, data, access etc.

Why have new methods?

- Cost
- Occupant Impact
- Time
- Miniturisation
- Accuracy
- Infrastructure

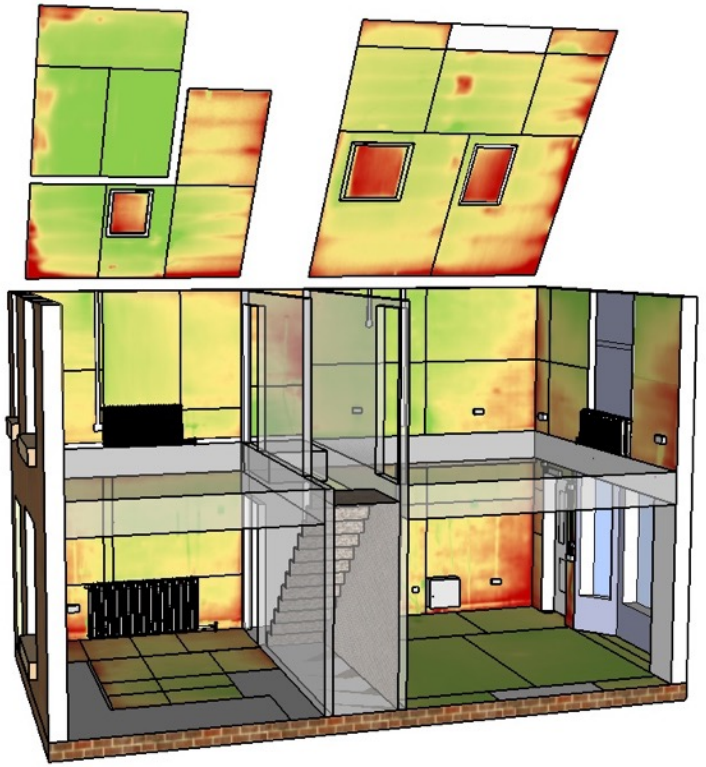
Fabric Performance

- Fabric measures
- U Values – Arcada, Wireless Method
- Low pressure Pulse airtest

- Reductions in cost and time – as well as cabling and logging
- Driven by analysis and technology

Fabric Performance

- Whole house – QUBe
- Standardised coheating methods
- Emerging methods on using thermography – average U values



Fabric Performance - Drones

- Drone scanning can be combined with other tech
- Thermography
- BIM

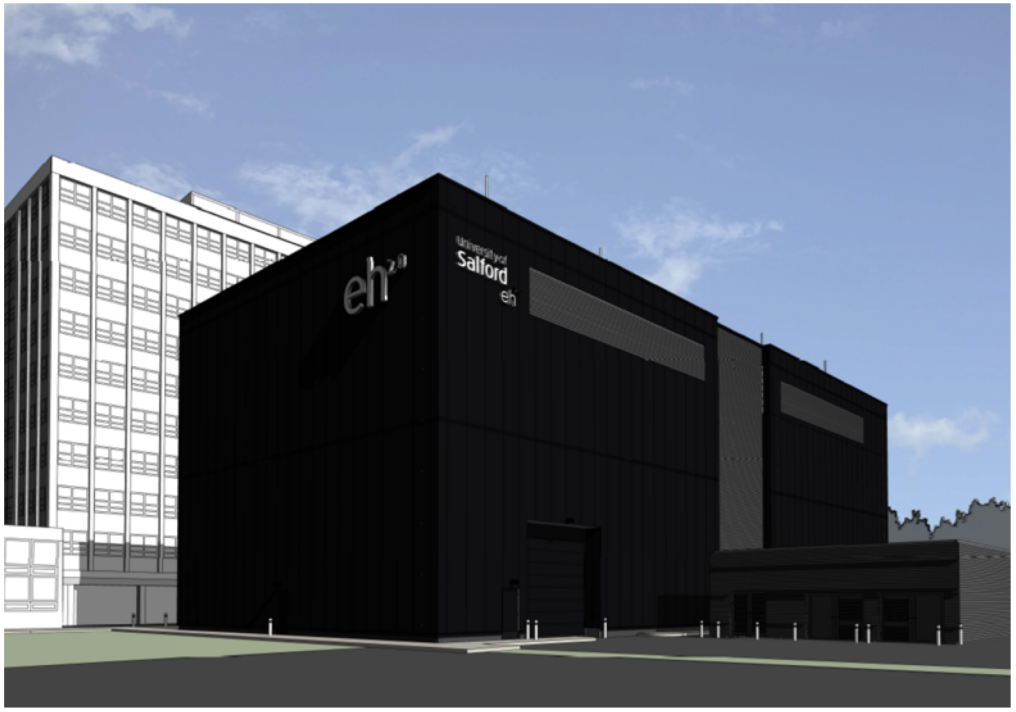
- Getting cheaper and helping understand the pathology of buildings with other data

Environmental Performance

- Cheaper sensors
- Better comms – wider impact of Internet and network technology
- New infrastructures – smart meters
- Smart meters>smart homes – CAD access to data and link to sensors

Whole building testing – EH2.0

- £16m research facility
- Whole building – multiple dwelling and small commercial
- Currently at planning
- Investigate new methods
- Research buildings and interventions



Implications

- More data, cheaper data – make sure analytical tools can keep up
- Make sure we are able as an industry to understand what we are looking at
- Are smart meters the start of a building performance revolution in domestic?
- Is a major overhaul in in-line testing, or a measured replacement for EPC possible?
- How far are we from a home with embedded sensors as a practical proposition?
- Would it help anyone?