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Successful Post-Occupancy Evaluations

# Using the evidence under our noses

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# What is POE for?

- Finding out how buildings actually work in use.
  - Using multiple methods, *to develop better insights.*
  - It's about improving practice, not developing theories, *though it may help others to develop theories.*
  - It's not that complicated: *much of the evidence is right under our noses, we just need to learn to look.*
  - It doesn't need to take a lot of time or money: *you just need to get going.*
  
  - When to review building performance in use? **NOW!**
    - ***Foresight:*** before doing work.
    - ***Hindsight:*** after doing work – *the traditional POE.*
    - ***Insight:*** while doing work.
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# Why haven't designers and builders tuned into outcomes?

- Not what clients have asked the industry to do: *“hand over and walk away” is systemically embedded in standard procedures and contracts, so follow-through is not part of the standard offering.*
  - Clients and government haven't set aside time and money for tuning-up after handover, *and have often preferred to bury bad news.*
  - Rigid divisions between funding of capital and operational costs, *getting worse if anything, in spite of all the talk.*
  - Policy emphasis on construction, not performance in use, *even when feedback information has been revealing problems.*
  - Outsourcing of technical expertise, research and performance feedback by central and local government, *e.g. privatisation of works departments, PSA and the BRE.*
  - “Post-Occupancy Evaluation” (POE) is a construction industry perspective, with handover the end, not the beginning! *Too often seen as academic and mostly about perceptions. **Better called Building Performance Evaluation, BPE.***
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# Five key questions

1. *How is this building working?*
2. *What do occupants and management think about it?*
3. *How does this relate to client and design intent?*
4. *How can this building's performance be improved?*
5. *How can future buildings be improved?*

**FOCUS ON OUTCOMES AND ACTIONS:  
*It's about getting things to happen!***

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# New non-domestic buildings:

## *What have we tended to find, for many years now?*

- They often perform much worse than anticipated, *especially for energy and carbon, often for occupants, and with high running costs, and sometimes technical risks.*
- Design intent is seldom communicated well to users and managers. *Designers and builders go away at handover.*
- Unmanageable complication is the enemy of good performance. *So why do we make buildings technically and bureaucratically complicated in the name of sustainability? Domestic buildings have now caught the same disease.*
- Buildings are seldom tuned-up properly. Controls are a mess. *If we have more to do, what chance do we have?*
- Modern procurement systems make it difficult to pay attention to critical detail. *A bad idea when promoting innovation.*
- *“The English spare no expense to get something on the cheap”.* ... **NIKOLAUS PEVSNER**



**KEEP IT SIMPLE, DO IT WELL, FOLLOW IT THROUGH,  
TUNE IT UP, CAPTURE THE FEEDBACK**

You can't tell if you have a good building  
*... unless you look into how it is working*

## Elizabeth Fry building has the last laugh

The story of the Elizabeth Fry building (AJ 23.4.98) contains a number of ironies. My favourite is that it didn't even make the shortlist of the Green Building of the Year Award in 1996.

*DR ROBERT LOWE*

*Leeds Metropolitan University*

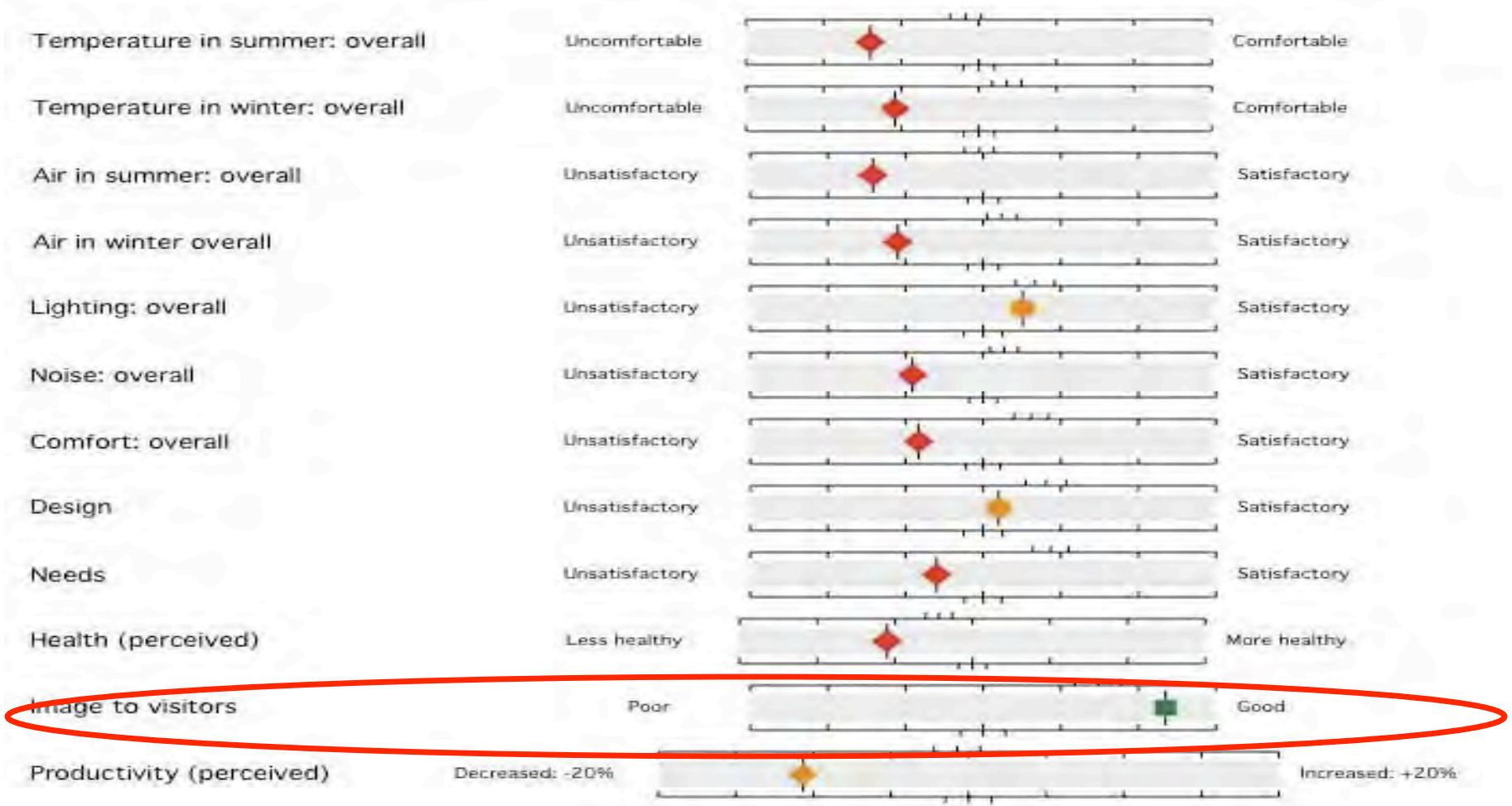


## LETTER TO ARCHITECTS' JOURNAL

*We went back in 2011 and it is still working quite well*

# Credibility gaps: Occupant satisfaction

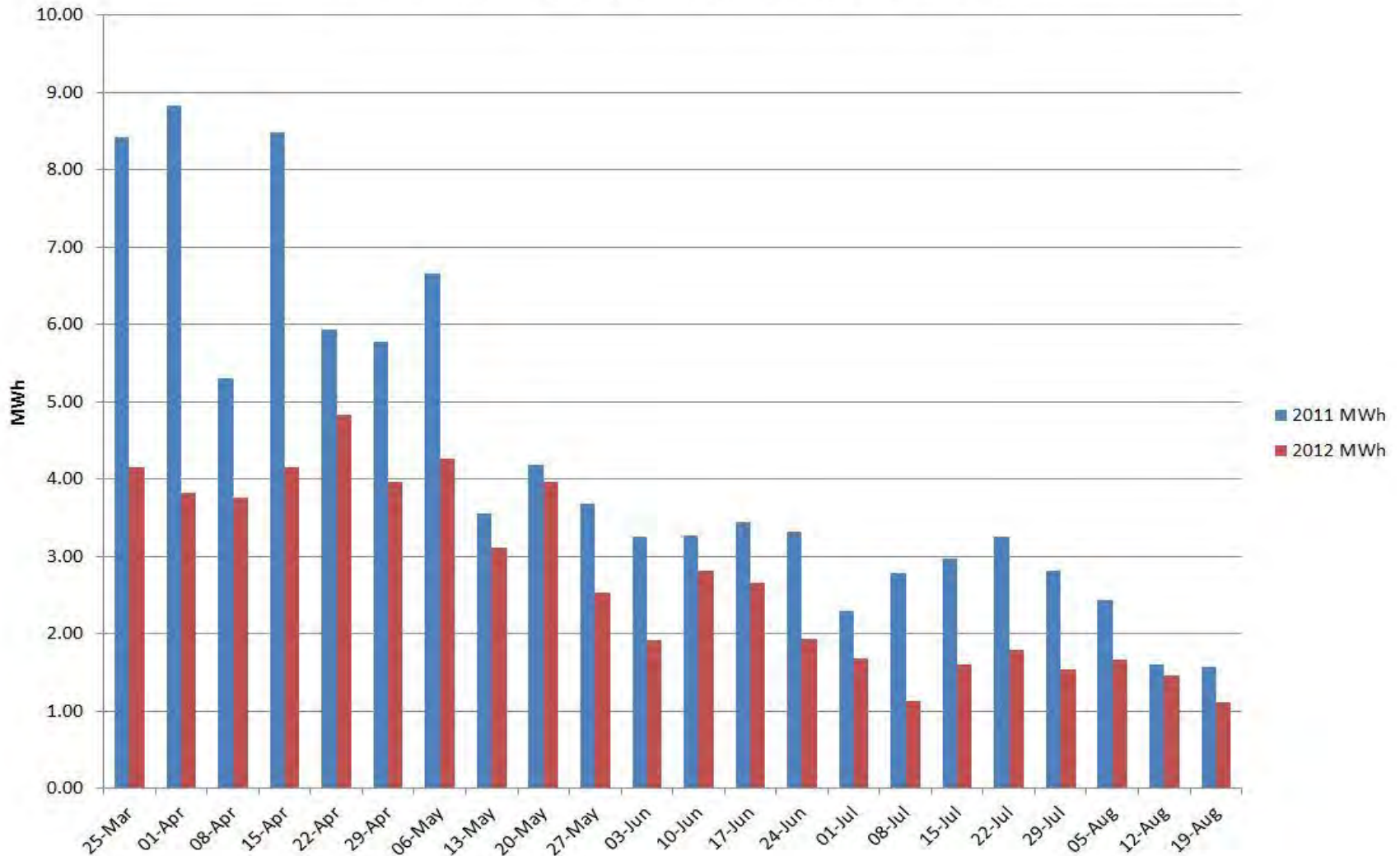
*Staff questionnaire survey, award-winning school, UK*



***Judges may not experience what the occupants do!***

# At E Fry's successor 2011-12

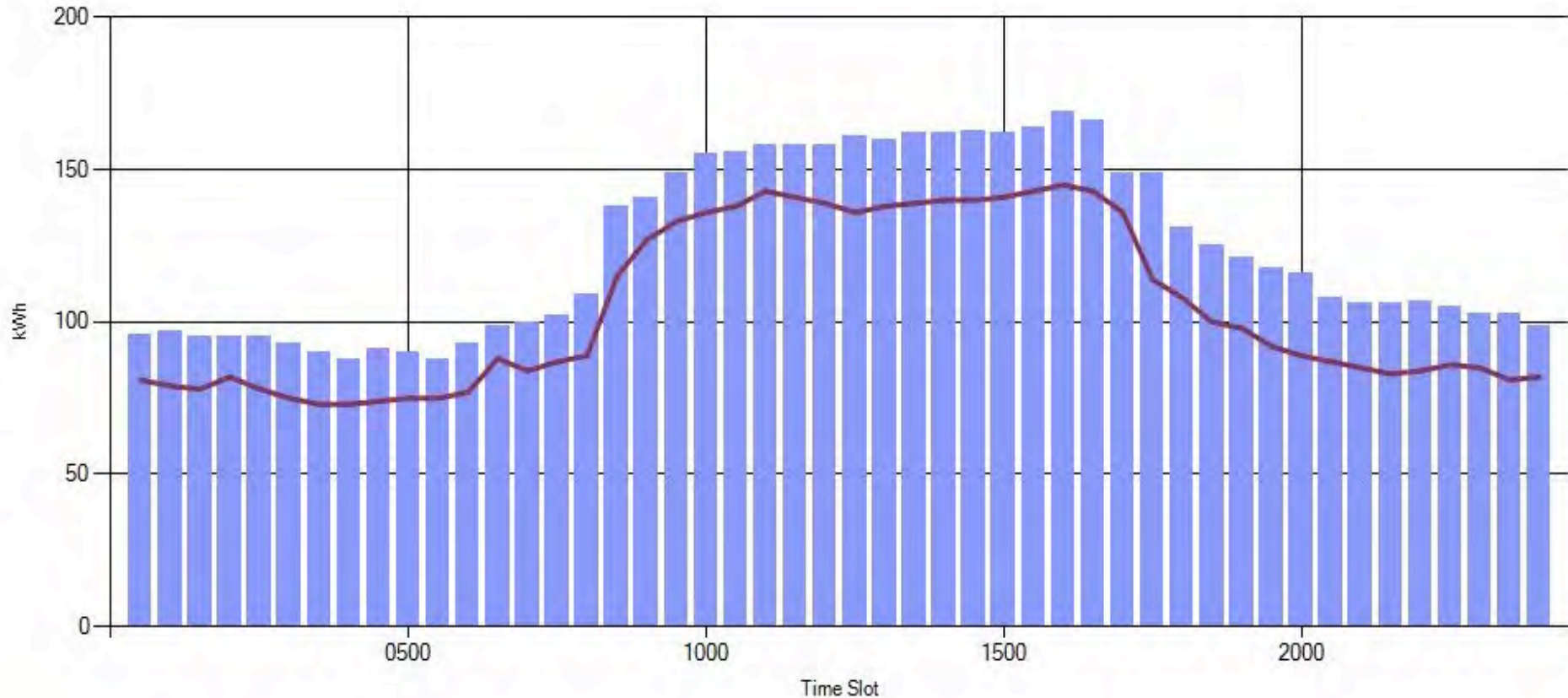
*weekly heat requirement before and after BPE*





# At another university's new building

*Effect of operational change recommended by POE*  
*Half-hourly electrical profile before and after*



12/12/2012 (Wednesday) :  
 5,949kWh, (£535.41 or 3,218kg CO<sub>2</sub>)

18/01/2013 (Friday) : 5,015kWh,  
 (£451.35 or 2,713kg CO<sub>2</sub>)

***Saving £ 30,000 per year***  
***180 tonnes CO<sub>2</sub>***

# Getting started on BPE/POE

- Adopt a drill-down approach where practicable:
  1. **BASIC**: *the wet finger*
  2. **INTERMEDIATE**: *get some useful data*
  3. **ADVANCED**: *deeper investigation.*
- None of these levels is academic research in the traditional sense – we see that as Level 4.
- Ideally, beyond the Basic level, work should be both:
  - **Separate** from the client, design and building team, to provide objectivity and a wider view. *This can involve a mentor, consultants, or academic input.*
  - **Connected**, so the people and organisations directly involved learn through personal experience, and take this back into their organisations and the wider world.

# LEVEL 1 – Basic

*Half to one day on site for 1 or 2 people*

- Short pre-visit questionnaire to collect basic data.
  - Semi-structured interview with occupier – *in managed buildings, frequently the building or facilities manager.*
  - Walk-around with the occupier/manager.
  - Inspection of mechanical & electrical plant and controls, *with operating and maintenance staff if available.*
  - Inspection of record drawings, user guides, O&M manuals and commissioning and test results.
  - Review of basic energy data, if available.
  - Observations and spot checks of internal conditions.
  - Casual discussions with other occupants, if possible.
  - Take photos, *including infra-red if you have a camera.*
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Spot 12.2 °C

17.9

12.4

 FLIR

## LEVEL 2 – Intermediate

*a week or two*

- Energy analysis, e.g. CIBSE TM22 (1999 version). *Can tell you a lot about what is happening.*
  - Occupant questionnaire survey. *The Building Use Studies (BUS) survey is widely used.*
  - Spot measurements of internal environment.
  - Investigate plant operation via BMS (*if available*) and by direct observation (*often reveals things the BMS doesn't*)
  - Simple data logging of environmental conditions.
  - Involve occupants and management. Ask awkward questions. *Don't take anything for granted.*
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# Can we afford to do BPE/POE?

## *Surely we can't afford not to!*

- Construction-related institutions require their members to understand and practice sustainable development.
- How can we do this, unless we understand the consequences of our actions?

### **SO HOW ABOUT?**

- Changing our attitudes to the nature of the job.
  - Re-defining perceptions of the practitioner's role, making follow-through, feedback and POE routine.
  - Closing the feedback loop – rapidly and effectively.
  - Making much more immediate and direct links between research, practice and policymaking.
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# Getting more sense into procurement

## *Soft Landings can help*

1. **Inception and Briefing**  
*Appropriate processes, better relationships.  
Assigned responsibilities, including client.  
Well-informed targets related to outcomes.*
2. **Design and construction**  
*Including expectations management.*
3. **Preparation for handover**  
*Better operational readiness.*
4. **Initial aftercare**  
*Information, troubleshooting, liaison,  
fine tuning, training.*
5. **Longer-term aftercare**  
*monitoring, review, independent POE,  
feedback and feedforward.*

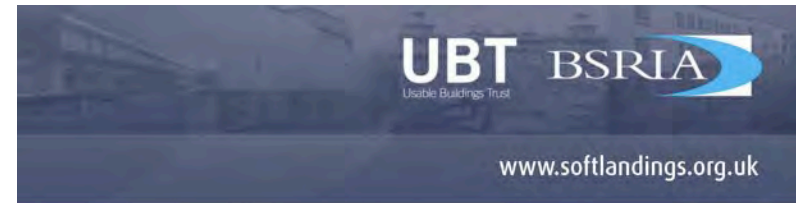
***Runs alongside any construction process***

***Downloadable free***

*from [www.usablebuildings.co.uk](http://www.usablebuildings.co.uk)*

*and [www.softlandings.org.uk](http://www.softlandings.org.uk)*

***BSRIA is hosting a UK industry group.***



*the* **SOFT LANDINGS FRAMEWORK**

for better briefing, design, handover and building performance in-use



# Evaluation into action:

## *What teams can do with BPE information*

- **Improve the performance of the building in use:**  
*Nearly always possible, but needs motivation, from occupiers too.*
  - **Improve the goods and services of those who provided it.**  
*Always possible. Needs connection, motivation, and organisational knowledge management; and of course paying for!*
  - **Improve their procurement and delivery processes.**  
*e.g. using Soft Landings procedures.*
  - **Learn personally from the experience**  
*Nothing has greater impact than first hand exposure.*
  - **Contribute to the wider knowledge base,**  
*In the past, BPE information was often not well communicated, or regarded as anecdotal, so people didn't take the lessons to heart.*
  - **Save money by spending on the things that really make a difference**
  - **Build relationships, retain customers, build reputations**  
*Leading firms have often used marketing budgets to get started.*
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# OVER TO YOU

*Will you be the change ...  
or will you be overtaken?*

**POE/BPE:  
JUST GET ON WITH IT!**

Supporting information is downloadable free at  
[www.usablebuildings.co.uk](http://www.usablebuildings.co.uk)

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