

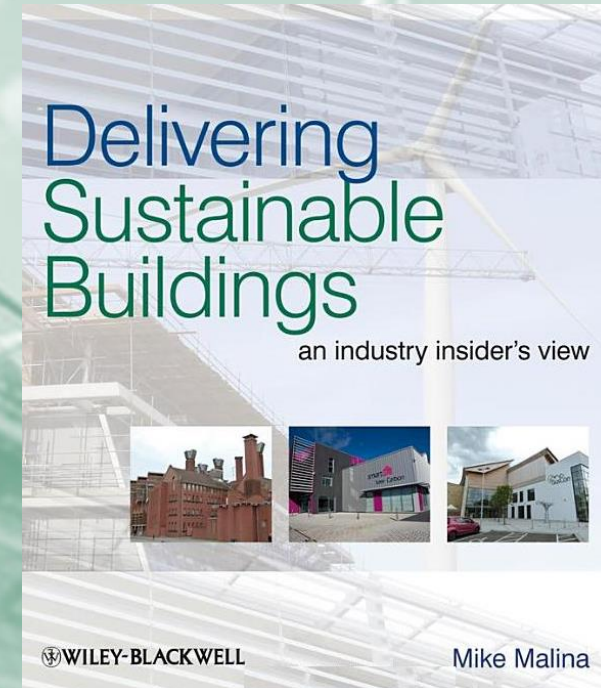
CIBSE ASHRAE Group

How Controls, Commissioning & Collaboration are coming together to narrow the performance gap

Mike Malina

20/05/2015

Keeping it all going – the importance of maintenance to Sustainability



B&ES / BCIA Conference 2014

10:80:10



Ten per cent of the total lifetime cost of the average commercial building is invested in its construction.

Eighty per cent is spent on **operating the building** for its time of use. **A major function is the maintenance process**

The remainder of the total cost is in dismantling and demolition.

This means that **ninety per cent of a building's costs are entirely influenced by its design, construction and operation.**

Maintenance should not just be an add-on – it's fundamental.

**We have to be much more than
building services engineers**

Buildings involve plant, services and People

We have to be:

Psychologists – people behaviour

Educators – awareness to control and operate

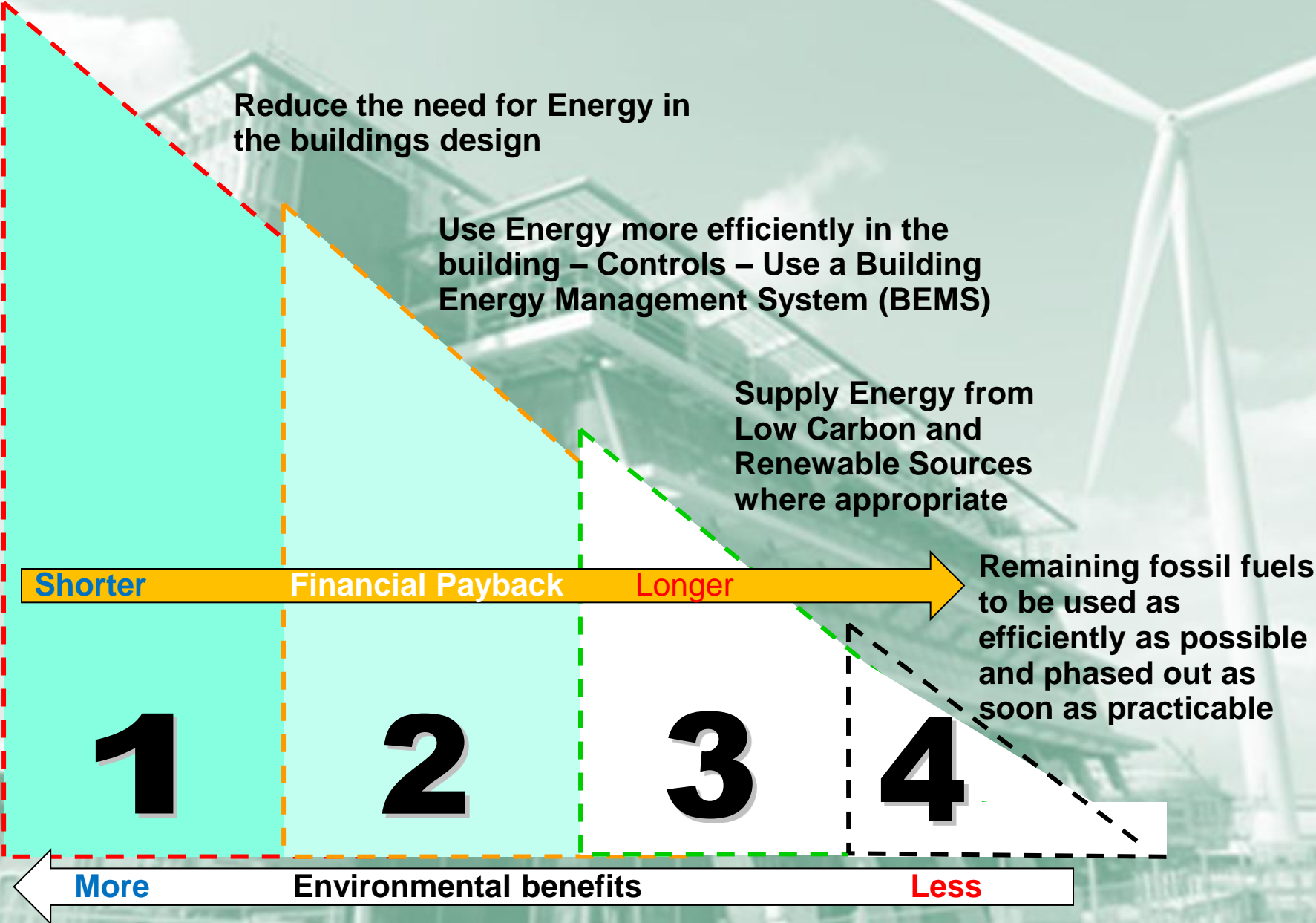
**Communicators – making the message relevant –
what's in it for “me”**

Diplomats ! - coping with competing priorities

Waste / Inefficiency - Double Trouble – Energy source and in our buildings



Energy Hierarchy - What Delivers an energy efficient Building?



History repeats!

Existing systems in buildings

So what about Low Carbon & Renewable systems?

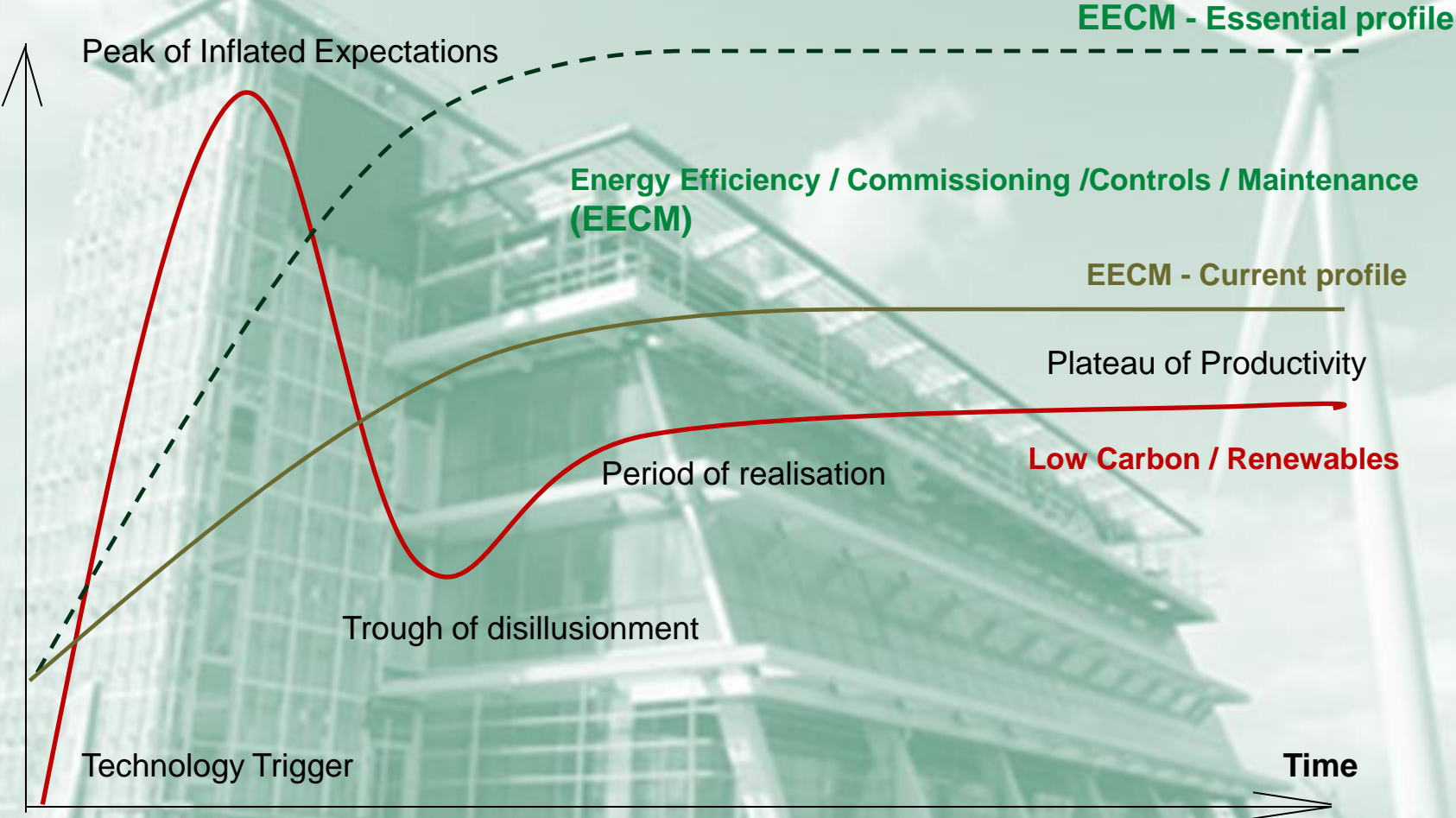
Solar Water and Heating
Ground Source Heat Pumps
Air Source Heat Pumps
Biomass
Bio-Fuels (Liquid)
Rainwater Harvesting
Grey Water Systems
Photovoltaics for Microgeneration
Micro Wind Energy
Micro Hydro Generation Systems
Fuel Cell Technology
Anaerobic Digestion *
Combined Heat and Power
Water Conservation
Mechanical Heat Recovery Ventilation
Wireless Control Technology
Passive ventilation and light systems
Integrated and Hybrid systems technologies
Energy Efficiency
Low Energy Lighting

**Are these integrated with each other or
the existing building systems?**

Technology Hype

New technologies are over hyped by some of the media and vested interests

Visibility / Profile



Based on the Hype Cycle: - Gartner Group.


What's the image – Sustainable Buildings 2050

New Build 10%



Retrofit 90%





Key Areas for delivering and operating a low carbon - energy efficient building. The 6 C's

Commissioning

Continuous Commissioning

Controls

Communication

Competence

Compliance

www.goo.gl/5pCHT

Delivering Sustainable Buildings

an industry insider's view



 WILEY-BLACKWELL

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Delivering Sustainable Buildings

an industry insider's view



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**In the realm of ideas everything depends on enthusiasm;
In the real world, all rests on perseverance!**

