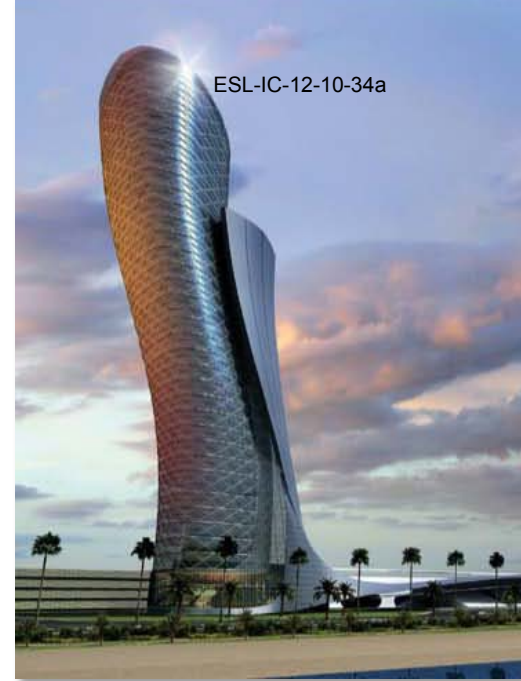


Strategies for Smart Building Realisation

ICEBO Conference 2012

Mani Manivannan
MSc., MIET, CEng
25 Oct 2012

m.mani@arup.com
www.arup.com



- **Introduction & context**
- **Prelude to the paper**
- **Importance of strategic concepts**
- **Thematic strategies**
- **Constraints and opportunities**
- **Wider implications**
- **Conclusions**

Arup

A global firm of design consultants in the built environment with over 9000 Staff located in more than 80 offices



www.arup.com

Arup IT and Communications

100 Technology and Business Consultants.

London, New York, Los Angeles, Hong Kong, Dubai,
Toronto, Berlin, Johannesburg, Istanbul, Singapore & Sydney



Drivers of Change

Economy

more for less,
knowledge working
improving commercial advantage
innovation

Environment:

global warming
resource efficiency
social conscience

Technology

advancing technologies
integration within business
integration with construction

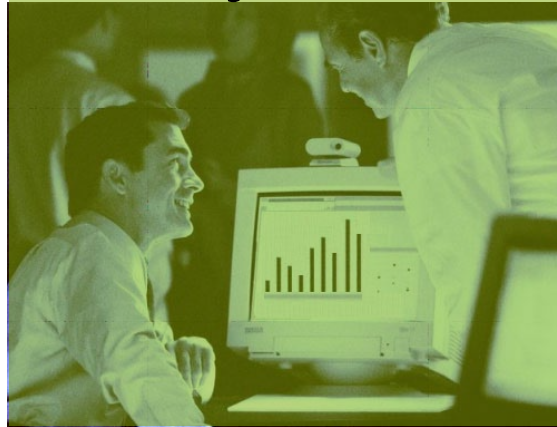
What do developers & agents want?

ESL-IC-12-10-34a

How “responsive” and “smart” does a building have to be to satisfy the demands of users and technology?

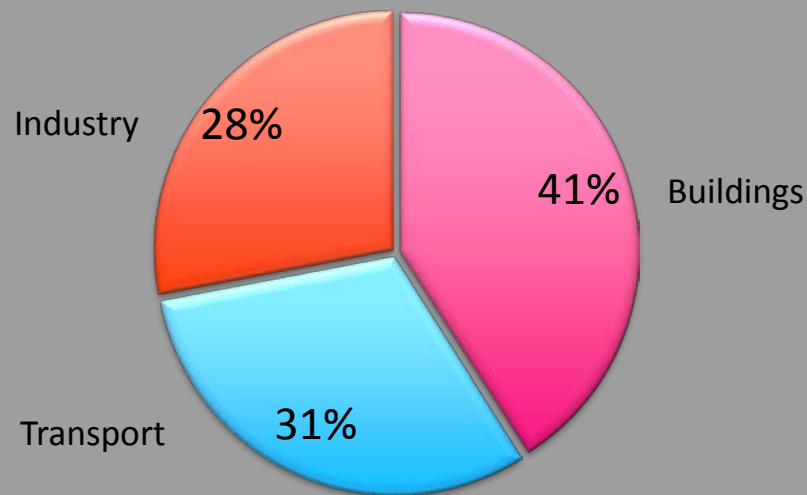
...what benefits will the next generation of buildings offer its occupiers and how much will they cost?

Buildings consume a lot of energy....What about sustainability and climate change?

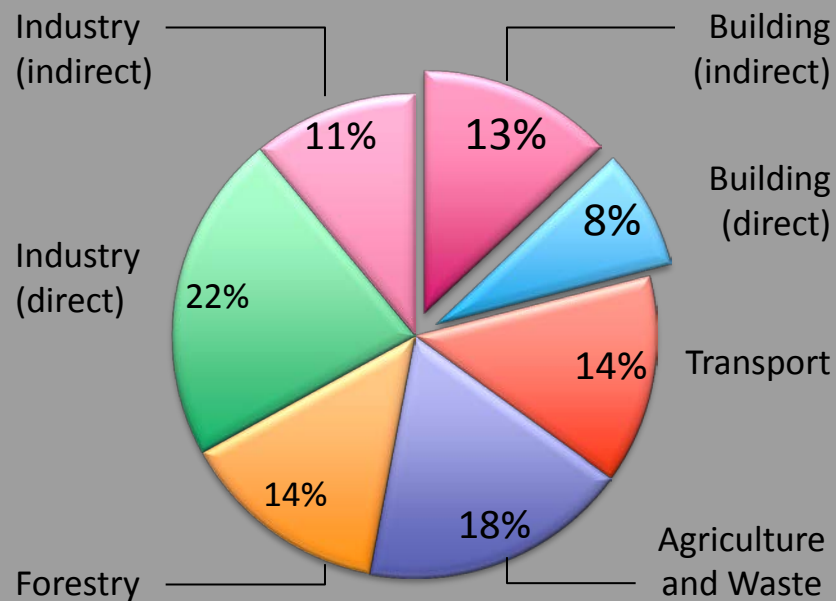


Buildings consume 40% of worldwide energy and produce 21% of green house gas emissions

Energy consumption



Mix of CO₂ emissions

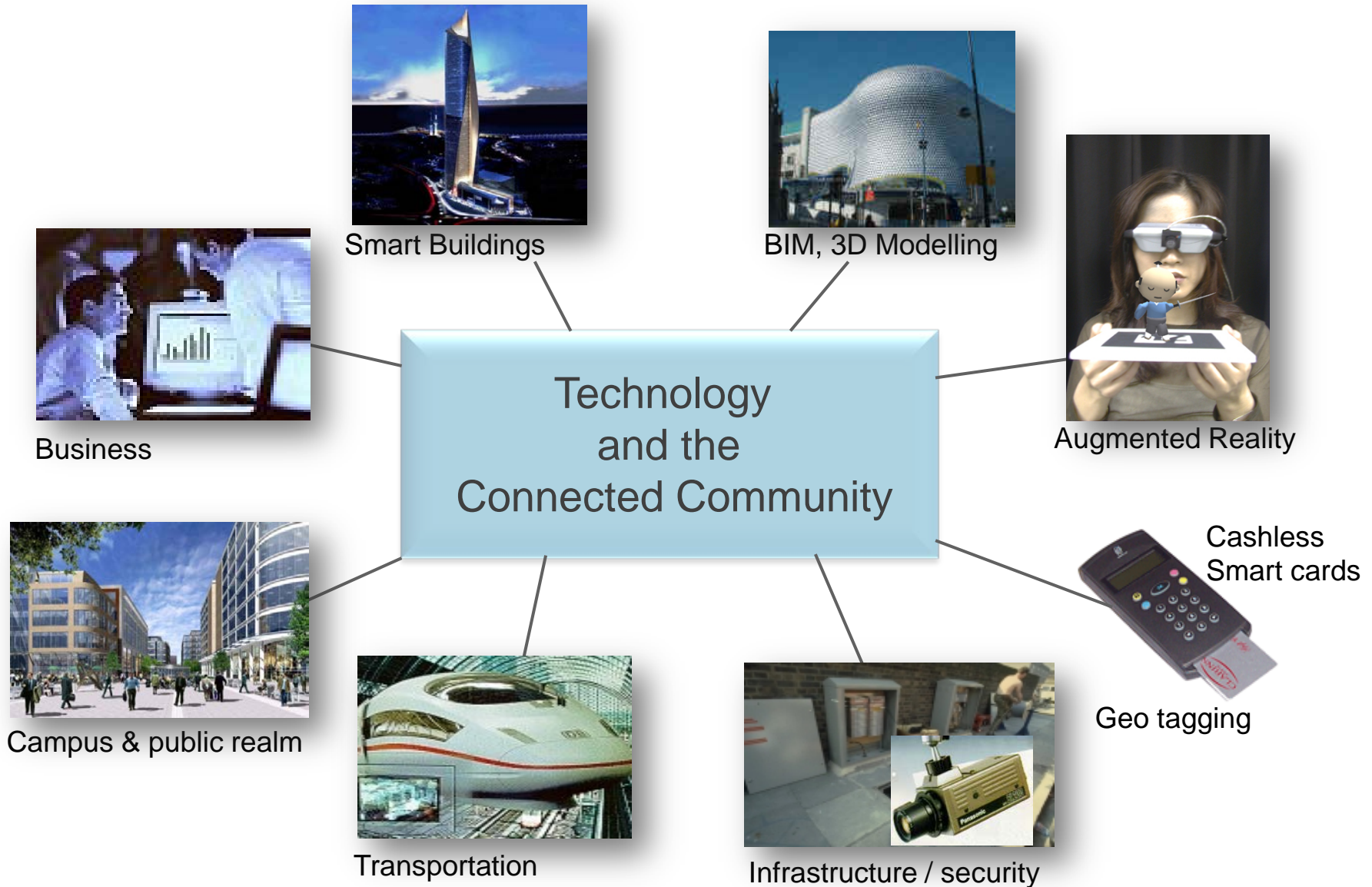


- **What is ‘Smart’ – can we define it?**
- **Why bother, what’s in it for you and me?**
- **No consensus among stakeholders**
- **Difficult multidisciplinary interfaces**
- **Timing of smart design – too early or too late?**
- **Standards, best practice codes, are there any?**
- **Emerging maturity, co-operation, buy-in**

“The apparent lack in understanding or appreciation of the value structures that frame the concepts for smart buildings has seeded the need for further debate.”

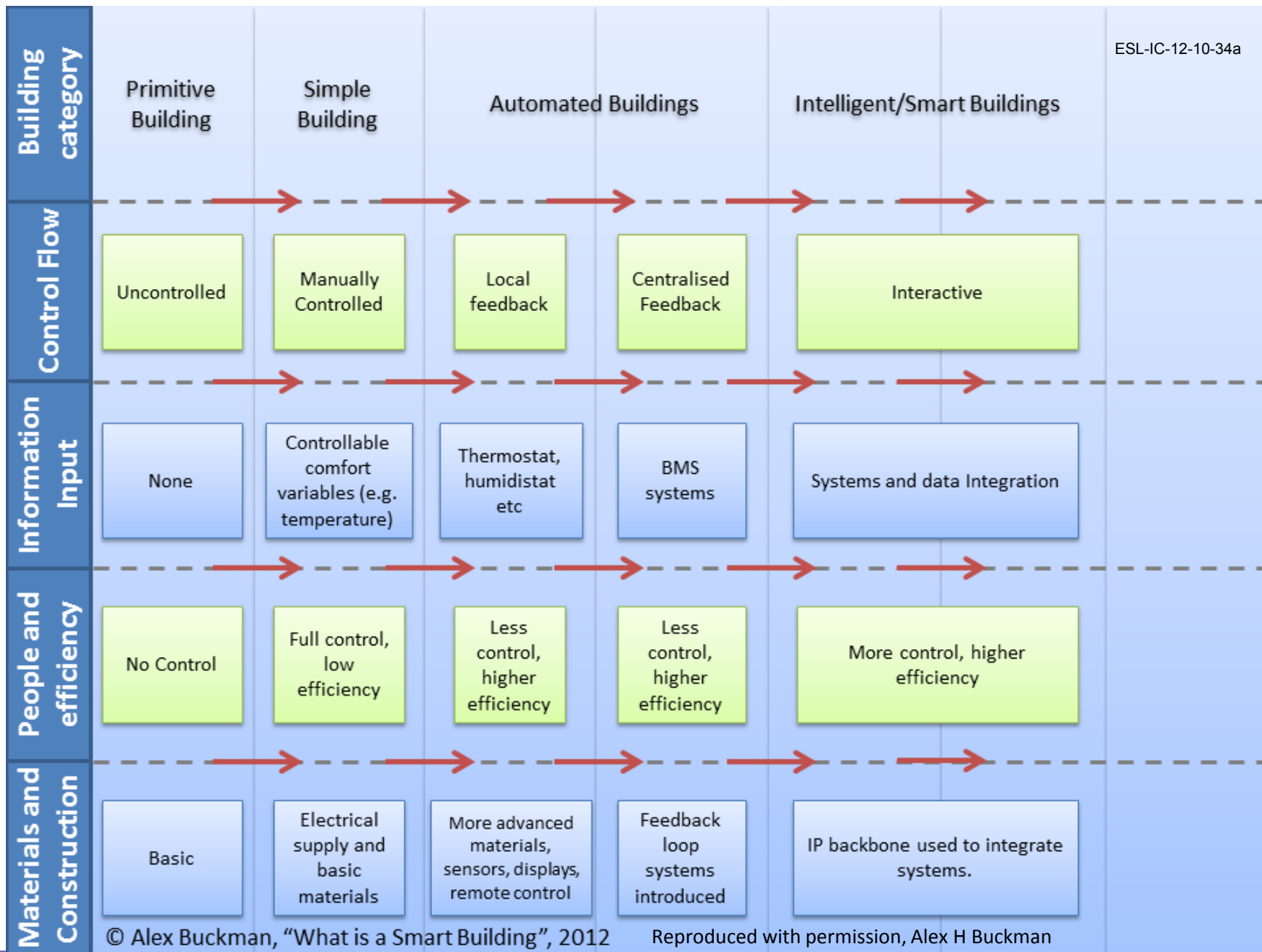
Technology convergence

ESL-IC-12-10-34a



Convergence and IP





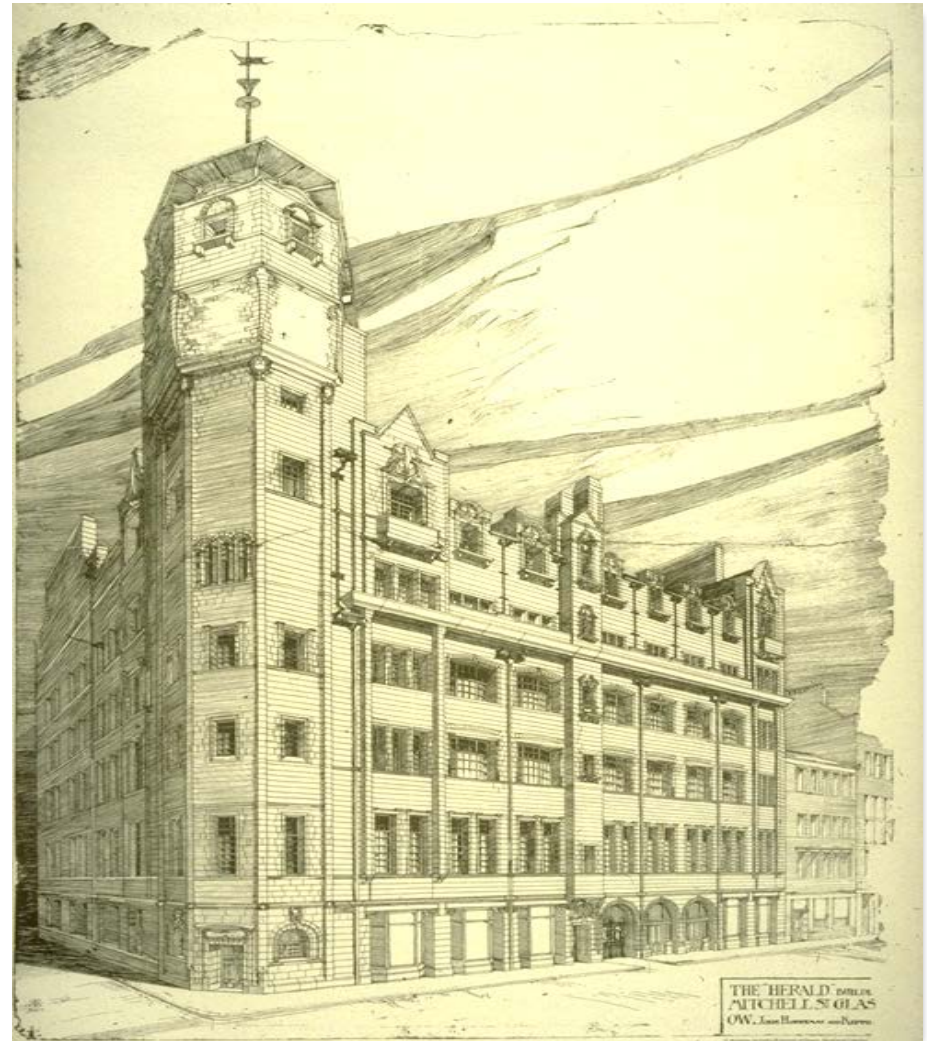
© Alex Buckman, "What is a Smart Building", 2012

Reproduced with permission, Alex H Buckman

Can we define a Smart building?

ESL-IC-12-10-34a

“An intelligent building provides a responsive, effective and supportive environment within which an organisation can achieve its business objectives”



Source: IB Asia

How do you spot a smart building?

ESL-IC-12-10-34a



- **‘Smart’ in the context of business need**
- **Where is ‘Smart’ within FM / Ops / Logistics?**
- **Does ‘Smart’ have a lifespan? Should it be refreshed?**
- **Who invests and who benefits?**
- **Planning and a plan**
- **Commissioning a Design brief**

“Achieving a common consensus across all markets for what ‘smart’ means will therefore be difficult unless of course one has a more holistic view and somewhat generic attitude to broaden the definition.”

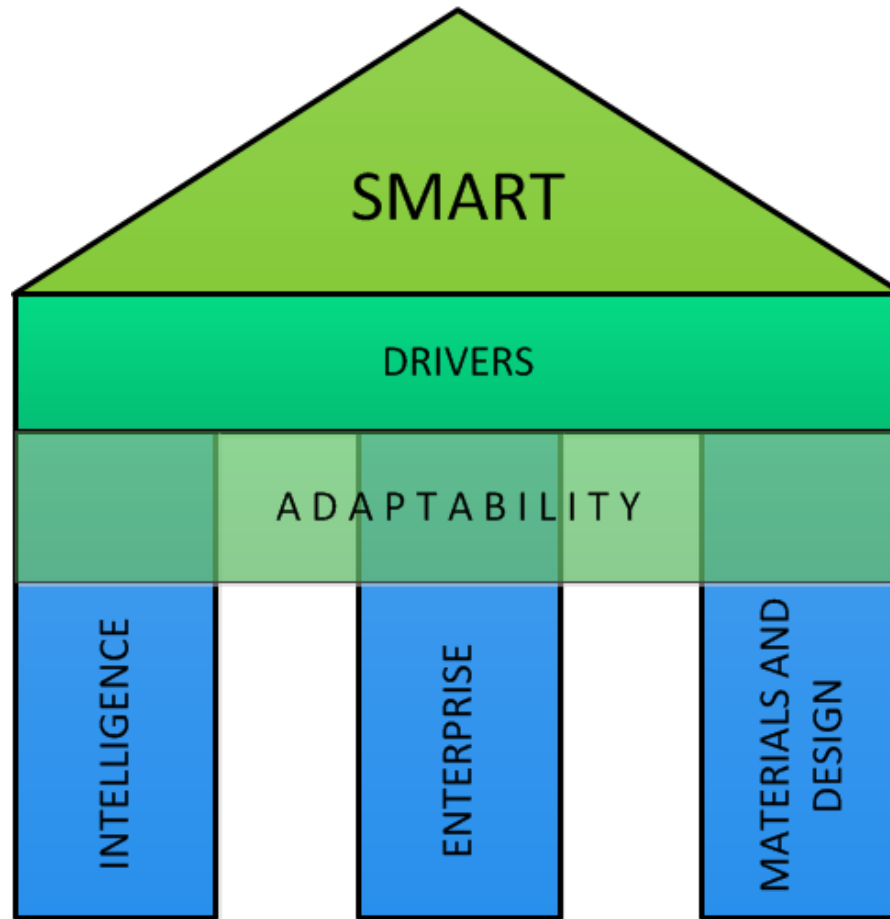
Integrating *People > Process > Place*

ESL-IC-12-10-34a



Route to a 'smart' strategy

ESL-IC-12-10-34a



© Alex Buckman, "What is a Smart Building", 2012

Reproduced with permission, Alex H Buckman

- **Thematic thinking sharpens focus**
- **Parallel themes help to prioritise**
- **Think high impact interventions**
- **Top level ‘Themes’**
- **Formulate a strategy**
- **Communicate and champion the strategy**

Top level themes “efficiency, sustainability or rich experience”

Constraints and opportunities

ESL-IC-12-10-34a

- **Diffused responsibilities**
- **Integration between systems**
- **Co-ordination between trades**
- **Managing expectations**
- **Construction and supply chain management**
- **The value story, delivering and proving it!**

Concept of operations
Life expectancy & ROI
User centric experience

Procurement methods and supply chain
Value management

- **Generic definition of ‘Smart’; understood by all**
- **Thematic requirements, value story, budgets, plan**
- **Start at pre-concept, feasibility; *‘smart’ is not the last trade within construction!***
- **Zero sum or positive sum justification**
- **Collaborative task force, joined-up operations**

Thank you

feedback contributions

m.mani@arup.com