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Intelligent Buildings

Overcoming the Barriers to Market

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FRS LPC

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The Potential of Intelligent Buildings

- Responsiveness
  - To needs of occupants - control of work place environment:
    - *HVAC*
    - *Lighting*
    - *Air Quality*
    - *Shading*
    - *Integration of renewable energy sources*
  - To needs of (business) processes carried out in the building:
    - *Communications*
    - *Security*
    - *Monitoring*
    - *Flexibility in use, eg rezoning*

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Familiarity of Intelligent Buildings?

- Familiar term to range of groups
- Risk in familiarity?
  - *Demand side*
  - *Supply side*
- Poor understanding of the benefits – particularly by client groups

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Market Penetration – European Market

- UK: <1% of construction industry turnover
- France:
  - 1.2% - 1.3% growth 2001 – 2003
  - IB services grew 14% as part of BMS hardware that decreased by 3%
- Greece:
  - 10% annual growth, partly due to Olympic Games
- Italy: Annual growth of 3.5%

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Client Resistance?

- Client reluctance:
  - Poor appreciation of the benefits
  - No internal ownership in organisations, eg IT, security, FM, FD …
- Influence of procurement culture?
  - 1st cost & lowest risk vs innovation & cost premium (perceived high risk)
- Supply side methods:
  - Selling silo packages, not integrated solutions
  - Poor appreciation of the needs of clients' business processes

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High Level Barriers: Technological

- System longevity – life cycle of the order 2-3 years
- Forces change for proprietary systems that can be difficult to upgrade – in any event potentially significant cost
- Need to establish open protocol
- A range of potential systems
  - KNX
  - Echelon
  - BacNet
  - Profibus
  - ….
- Slow progress towards a widely accepted market standard

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High Level Barriers: Economic

- IB sector dominated by supply side push from small number of globally based companies
- Implementation in local markets through small consultancies
- Target market – developers, owners and managers
- Results from recent survey of market:
  - 70% of companies do not have IB technologies installed
  - Only 20% said they were unwilling or unlikely to install IB technology
  - Economic benefit is most important factor influencing decision …
  - … anticipated operational cost reductions of 20% in first year
  - 83% of companies surveyed bought, but …
  - … 62% would preferred a leasing solution

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High Level Barriers: Economic Drivers

- IB technology will gain greater market penetration if systems:
  - Give added value to a building
  - Result in at least 18% energy savings
  - Have a payback < 8 years
  - Are supported by after sales service and …
  - .. reasonably priced maintenance
  - Can be upgraded
  - Have variety of financing options, eg TPF, energy performance contracting, leasing …

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High Level Barriers: Legislative

- Most legislation concerned with construction fails to acknowledge IB, and the potential benefits
- Some UK Building Regs relevant to IB technologies, eg:
  - Fire Safety
  - Fire alarms and detection systems
- Some concerned with conservation of fuel & power:
  - Controls for space heating
  - Commissioning, operating and maintenance of heating and hot water controls
  - Lighting systems and controls
- Resolvable through setting up of Working Groups to address sector specific issues – working in partnership

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Energy Performance of Buildings Directive

- EPBD comes into force in UK in January 2006
- Calculation method needs to take account of:
  - Thermal and solar characteristics of building envelope
  - Heating, cooling, ventilation and hot water systems
  - Passive and active solar technologies and systems
  - Indoor comfort systems
  - Advanced energy production and distribution systems
- CENELEC and ETSI developing standards for calculation of energy performance of buildings and environmental impacts
- Includes: 'Calculation methods for energy efficiency improvements by application of integrated building automation products and systems' (CEN TC 247)

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High Level Barriers: Behavioural

- Designers
  - Need to consider integration so providing whole solution
- Managers
  - Empowering (energy) managers to adopt innovative solutions
- Decision Makers
  - Identifying & quantifying the benefits of IB solutions
- Installers & Distributors
  - Raising awareness of the benefits of integrated solutions
- End Users
  - Encouraging appropriate use of IB solutions in the work place environment

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Overcoming the Barriers

- If clients have poor appreciation of the benefits of IBs:
  - What are the most important defining and tangible features that deliver the benefits?
  - How are the benefits most likely to impact on market differentiation and ROI?
- If client appreciation can be improved by raising awareness how can the other barriers reduced or eliminated?
  - *Legislative (Working Groups)*
  - *Behavioural (Training and awareness)*
  - *Economic (Training &awareness)*
  - *Technological (Product Development)*

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Intelligent Building Activities at BRE

- Collaborative development of a rating method for intelligent buildings
- Training and awareness
- RFID product application development; tagging
- Development of wireless technology applications:
  - *Remote boiler management*
  - *Remote building management*
- Telecare – remote delivery of healthcare
- Opportunities to extend scope of activities …

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Partnering to Progress IB Agenda

- Working Groups to identify how to develop Regulatory & Standards issues (based on nominal contribution), eg:
  - *The use of tagging & sensor technology to extend network applications in the built environment*
  - *Protocols to support implementation of assistive technologies*

- Training and awareness services:
  - BRE provides EIB Certified training for technicians, installers, clients and other interested parties
  - Seeking to increase scope of training and awareness capability

- Product and service development:
  - Work with supplier to develop value added product or service, eg Application of RFID applications

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Two Examples of Prospective Working Groups

- Regulatory and Standards requirements for the application of tagging and sensor technologies in the built environment:
  - *Linking SAN, LAN and WAN*
  - *Extension of network routing capability*
- Protocols for effective implementation of assistive technologies:
  - *Making protocols application specific*
- Other themes?

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Intelligent Building Demonstration & Training Facilities at BRE

- Strong synergies with Working Group activity – demonstration of nascent technologies
- Major recurrent theme – need for training and awareness
- BRE already provides EIB training through its training centre – seeking to extend scope to meet the industry's needs
- Opportunity to initiate a major demonstration capability:
  - IB Demonstration Centre – immediate
  - Innovation Centre – future

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Intelligent Building Centre for Demonstration & Training

- Vacant space is immediately available at BRE for development into a Demonstration & Training Centre

- Concept - To provide a demonstration capability with attached training rooms:
  - Demonstration of concepts and solutions from Working Group activities
  - Support suppliers raise client awareness and training for more technical audiences, eg clients, agents, consultants installers, FMs …

- Would welcome discussions with organisations interested in partnering to develop the Intelligent Building Centre

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Moving the Agenda Forward

- Would welcome working with this audience group and others in the Intelligent Building sector to advance the IB agenda
- Workshop after lunch to explore immediate interests:
  - *Working Groups*
  - *Partners for development of Intelligent Building Centre*
- Post seminar please contact:
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