

IDCOP Research Purpose



Fig.1 to Fig.3 A significant fraction of the UK building stock will require refurbishment within the next few years in order to meet peoples' demands for a good quality of life.

The aim of the IDCOP consortium is to find new ways to improve the performance of building envelopes over the whole building life cycle. The challenge for this research is to achieve a more sustainable urban environment which benefits people, creating a higher quality of life in their urban environment. The research focuses on the existing UK building stock. New technologies and processes for maintenance and refurbishment of existing buildings will be developed, evaluated and promoted.

Programme Structure

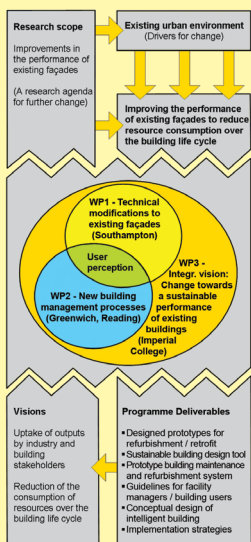


Fig.4 Correlation between the research programme, its deliverables and the urban environment

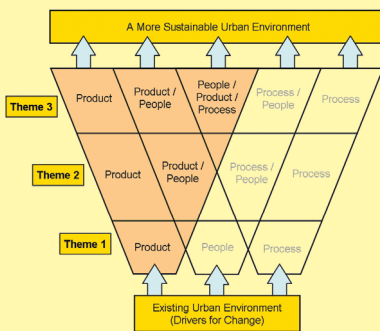


Fig.5 Representation of the relationship between research themes, key drivers and their interaction

IDCOP is structured into three research themes:

- **Theme 1** - Baseline knowledge and opportunities for an improvement of the building envelope.
- **Theme 2** - New solutions for reducing consumption of resources and for smart façade technologies.
- **Theme 3** - Implementation strategies for achieving a sustainable urban environment in the UK including effective demonstration / dissemination vehicles to overcome market resistance.

The research themes cut across three key drivers:

- **Products / People / Processes**

Collaboration and Dissemination

Industrial Partners

BP Solar
Bennett Burrows Limited
Castle Point Borough Council
Faber Maunsell
Hamlet Habitats
Hyde Housing Association
IT Power
Marley Building Materials Ltd.
Parchment Housing Group
Peabody Design Group
Sustainable Homes
The Housing Corporation

<http://www.idcop.soton.ac.uk>

Involvement of Industrial Partners and End Users

Close collaboration and critique from the IDCOP industrial partners form an important element of the programme. In addition, the consortium will consult other stakeholders and involve the ODPM on issues relating to building regulations.

Dissemination

- Workshops and meetings for industry, policy organisations and stakeholders.
- Articles, case studies and reports.
- Training modules for new technical and professional staff, including students.

Building Envelope Function

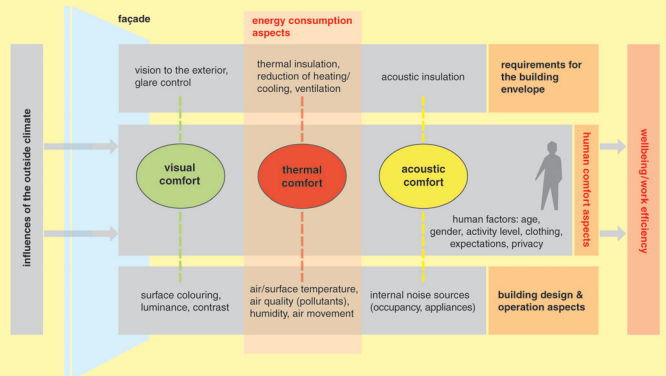


Fig.6 Interaction between the human feeling of comfort, building use, building envelope and energy consumption

The ideas for new building envelope solutions are:

- To develop sustainable façade technologies and methods for building refurbishment.
- To reduce the consumption of non-renewable resources in a way that is economically viable and socially acceptable.

Building Envelope Refurbishment

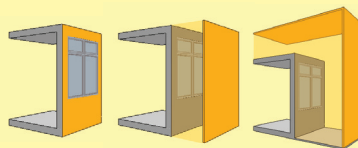


Fig.7 Basic building envelope types

The IDCOP research programme concentrates on:

- Multi-storey, multi-occupancy buildings.
- Domestic and non-domestic sectors.

IDCOP focusses on three basic architectural envelope types, their benefits and constraints as well as their applicability for refurbishment:

- Single skin envelopes
- Double skin envelopes
- Climatic envelopes

The development of maintenance, refurbishment and façade technology solutions as well as personalised control concepts will use an identified representative building stock and will consider refurbishment options based on the three specified elementary building envelope types.

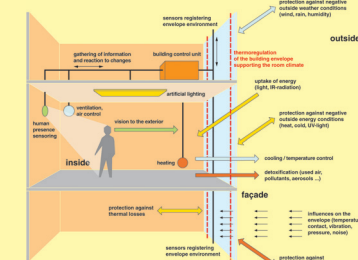


Fig.8 Idealised function of a smart building skin

Overarching Outcomes



Fig.9 Examples of the three identified building envelope types: Single skin envelope, double skin envelope and climatic envelope

Envisaged outcomes of the programme are:

- New knowledge about the role of building envelopes as mediators between internal and external environments and the consequences for environmental, social and economic sustainability.
- Specific technical knowledge to assist in new product development (including materials, components, systems, sensors and monitoring technologies).
- Specific performance knowledge to assist the production of models, indicators and measurement tools.
- Training of new technical and professional staff, including students, with modules for short courses.