Leveraging R&D for the Australian Built Environment

BEIIIC Meeting, 6 July 2012, Canberra

Dr Keith Hampson, CEO, Sustainable Built Environment National Research Centre (SBEnrc)

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Presentation Structure
1. Background to Australia’s SBEnrc
2. R&D Investment and Impact Project
3. Future collaborations …

Our Mission
To be a world-class research and knowledge broker in sustainable infrastructure and building design, construction and management

Growth of Collaborative Research through Australia’s SBEnrc

| QUT/CSIRO Construction Research Alliance | 1996 |
| 2001 |
| 2009 |
| 2010 |
| 2012 |
| 2015 |

Program 1 - Greening the Built Environment
Program 2 – People, Processes and Procurement
Program 3 - Productivity through Innovation

» A nation-wide collaborative research centre
» Industry, government and research partners
» Applied research and industry outreach across three integrated themes
SBEnrc Core Partners

Collaborating Partners

Collaborating Partners

SBEnrc = Public Private Partnership in R&D

• Build innovative networks of industry, government and researchers to deliver applied outcomes
• Attract and mobilise resources globally
• Research skills training for industry

R&D Investment and Impact Project

Background and Significance

• Australia’s R&D spend 2% of GDP
  – Denmark and US 2.5%
  – Finland and Sweden > 3%  (DIISRTE 2011)
• Australian Government target
  – 25% increased business engagement in innovation in the next 10 years
  – responses to climate change; improving workplace innovation capabilities; business innovation
• Built environment productivity growth is poor

www.sbenrc.com.au
Project Phases

1. Audit R&D investment since 1990
2. Case studies of past investment
3. Develop strategic roadmap for future R&D
4. Develop policy guidelines to maximise the value of R&D investments

R&D Strategy for the Built Environment

- SBEnrc support from strategic level
- Built Environment Industry Innovation Council (BEIIC) support
  - Catherin Bull on Project Steering Committee
- CIB New Task Group focus
  - TG85: R&D Investment and Impact

Retrospective Evaluation

Private-sector R&D on construction relative to total business R&D

[Graph showing Private and Total R&D over time]

Private Vs Public R&D on Construction

[Graph comparing Private and Public R&D over time]

Government Agency R&D on Construction

[Graph showing Government Agency R&D over time]

Construction in the Australian Economy

[Graph showing Construction GVA in the Australian Economy over time]

Dr Keith Hampson, CEO, Sustainable Built Environment National Research Centre (SBEnrc)
Questions for Future Research

- Why did construction grow its R&D investment so quickly?
- What happened to government R&D?
- What is the most important role for public research organisations?
- Has the construction industry’s perception of public research changed over the past decade?

3 Case Studies

Examining mechanisms and impact of research and innovation in organisations

1. Digital Modelling
2. Green Building
3. Construction Worker Safety

Digital Modelling (CADD to IPD Pathway – Qld Govt)

Three IDDS Imperatives

CRC for Construction Innovation (2001-2009)

National Exemplar Leading Industry Change

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**Towards Integration**

**Business Effects of ICT Innovation**

- **Markets**: Increased
- **Functionality**: Increased
- **Productivity**: Increased
- **Operational Thinking**: Tactical Thinking, Strategic Thinking
- **Automational Thinking**: Informational Thinking

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**Modelling Implementation**

- **Increased Functionality**
- **Increased Productivity**
- **Increased Operational Thinking**
- **Tactical Thinking**
- **Strategic Thinking**
- **Automational Thinking**

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**Green Buildings Pathway**

- **Enablers**: Moving Industry Forward!
- **Pathway to Construction Safety**
- **Data Gathering**
  - Departmental reports
  - Meetings
  - Literature review
  - Interviews

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Key Messages …

• External innovation linkages are essential
• Timely and practical research a priority
• Range of innovation pathways

Future Case 4 – Nature of R&D

**Aim** – describe nature of R&D investment in Australian built environment in past decade with a focus on private sector engagement

**How?** – On-line nation-wide survey with follow-up interviews as required

5 Phases:
- **Profile** – Contractors; Sub-contractors; Consultants; Suppliers
- **Motivation** – productivity, safety, market; R&D tax incentives etc
- **Nature** – internal/partnering; fields of investment; top projects; future targets
- **Dissemination/Uptake** – internally and externally; mechanisms
- **Impact** – self-reporting; profitability; implementation; results in practice

R&D Priorities for Australia’s Property and Construction Industry

1. Model-based design – business models
2. Intelligent buildings and infrastructure
3. Solutions for a greener built environment
4. ICT for radical redesign
5. Nanotechnology for interface systems
6. Tree-based materials
7. Educational curricula

Future Collaborations …

**R&D Strategy**

• Internationally …
  – CIB Task Group 85
  – Stanford, US; Alberta, CA; Constructing Excellence, UK;
    BRANZ, NZ; VTT, FI; CSTB, FR

• Australia …
  – Commonwealth
  – State Governments
  – Private sector across supply chain
  – Research centres/universities

Objectives:

• Establish international network to exchange knowledge and new understandings related to leveraging R&D investment in construction
  – Comparable data, metrics
  – Develop knowledge-base and theory
  – Establish forum for exchange of information and knowledge - focus on dissemination and impacts
  – Strengthen collaboration between firms, government agencies and research institutions to deliver better outcomes