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Ecolibrium

All natural

A new style for supermarkets?

THE INNOVATION HUB

HUB

FOR AFFORDABLE HEATING AND COOLING

LIVING LABORATORIES PROGRAM

In a Living Laboratory all interested stakeholders – owner, suppliers, users, and researchers – can participate, collaborate, co-create and reflect on HVAC improvements and alternative solutions.

CSIRO

PRIME
A whole-of-industry pathway to a low-emissions future

AIRAH

What is a Living Laboratory?

A **Living Laboratory** is a real-life place that is made available to flexibly trial HVAC innovations in products and services, in an environment of collaboration. In a **Living Laboratory** all interested stakeholders (owner, suppliers, users, and researchers) can participate, collaborate, co-create and reflect on improvements and alternative solutions. Some distinguishing features of this approach include:

- Involvement of a broader group of stakeholders in an ongoing innovation process
- Established baselines and increased monitoring to enable a wide range of experimentation
- Broader, more holistic experiential surveying and reflection to better understand the full impact of trials. *(It is not just about energy but also user experience and co-benefits).*

An innovation accelerator

Currently new HVAC solutions are introduced or trialled independently, each in separate buildings that are subject to quite different operating characteristics and user constraints. This makes results from one scenario difficult to compare with other products or to generalise across applications.

Often, new HVAC products are introduced with some fanfare, the installation is locked down into a single pattern of operation, and then little more is heard of afterwards in terms of monitoring or quantifying of the benefits and implementation learnings. A least-cost focus in single building trials (rather than a least-cost focus over Australia's entire existing building stock) leads to a lack of budget for monitoring, post-installation innovation, reflection and information dissemination.

The significant difference with the **Living Laboratory** model is that the one Living laboratory space (representative of a specific targeted building type) is continuously used for testing alternative configurations of products and solutions. This allows for many competing or complementary alternatives to be tested at reduced cost. This model also provides a more open and transparent training ground for building services engineers and technicians and a source of new ideas and innovation though broader participation.

These differences make the Living Laboratory approach an "Innovation Accelerator" rather than just a showcase.

So what is **PRIME** anyway?

PRIME is a WHOLE-OF-INDUSTRY pathway to a low-emissions future, established over five years of industry consultation and visioning work. PRIME stands for Professionalism, Regulation, Information, Measurement and Emissions abatement.

PRIME

A whole-of-industry pathway to a low-emissions future

What does an HVAC Living Laboratory look like?

The focus of the HVAC living labs is primarily on how components can come together in different combinations to result in alternative HVAC systems that deliver a better comfort experience (or other owner defined co-benefit) with reduced cost and lower energy.

It is less to do with individual component efficiency (which can generally be determined in a scientific lab using technical standards) and more to do with the potential benefits of alternative system integration approaches and the building-user experience.

An HVAC living laboratory is expected to be a highly reconfigurable end-user space (radiant cooling, underfloor, conventional VAV) with a variety of alternative HVAC services (chilled water, fresh air, return air). In this way it can be a "Green Proving Ground" for a variety of emerging technologies.

The iHub has initially identified five priority building typologies to target with **Living Laboratories**.
These building types were identified as major energy consumers in the commercial building baseline study (2012).

Office buildings

A concept office space, with an aim to create low-energy working spaces that are more productive for staff.

9.0 MT CO_2/year (2012)

Retail buildings

A concept store, with an aim to create a better low-energy shopping space that keeps people in the store for longer.

14.2 MT CO_2/year (2012)

Education buildings

A concept classroom that's low-energy and improves attention and learning.

4.5 MT CO_2/year (2012)

Hospital buildings

A concept healthcare ward that's low-energy, reduces infection and improves patient experience and health outcomes.

3.3 MT CO_2/year (2012)

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Hotel buildings

A low-energy concept bedroom or suite that provides quiet, reliable comfortable air conditioning.

3.2 MT CO_2/year (2012)

As the iHub program develops, additional Living Laboratories may be added to cater for other building types.

What will the iHub support?

The **Affordable Heating and Cooling Innovation Hub** will provide resources to:

- Oversee the process of sourcing suitable energy saving technologies
- Design test plans
- Monitor performance and user experience
- Analyse and disseminate results.

The **Affordable Heating and Cooling Innovation Hub** will also contribute to the funding of technology installation costs.

Living Labs: A part of the Innovation Hub for Affordable Heating and Cooling

Structure and governance

The Innovation Hub will support the broad HVAC industry with knowledge dissemination, skills-development and capacity-building.

A board will oversee the strategic operation of the Innovation Hub.

Day-to-day administration of the Innovation Hub will be performed jointly by AIRAH and CSIRO, under the governance of the board.

Members of the Innovation Hub will be able to access CSIRO's ON incubator processes and $200 million Innovation Fund.

The **Living Laboratories** will be established under customised agreements covering agreed protocols for:

- Safe and secure access
- Commercial and personal privacy
- Sharing information and intellectual property
- Practical risk issues and their management.

Why participate in the Living Laboratory Program?

Building owners

- Demonstrate commitment to, and engage your stakeholders in a conversation on, environmental sustainability
- Access knowledge and administrative support for reducing energy bills
- Enjoy the benefits of new innovative products and services
- Financial support
- Upskilling of the workforce
- iHub sponsorship recognition.

Product suppliers

- Product validation in Living Laboratory Accelerator (Green Proving Ground) test sites with major property portfolio owners
- Access to scientific laboratory test facilities
- Public dissemination of summary results material
- Access to financial support for research and testing
- iHub sponsorship recognition.

For more information, go to www.airah.org.au/ihub

AIRAH is the leading specialist membership association for air conditioning, refrigeration, heating and ventilation professionals. It represents more than 10,000 professionals across Australia.

In operation for over 95 years, AIRAH provides the industry with representation, dissemination of technical information, networking, member recognition and education and training.

AIRAH is the secretariat of the broader PRIME HVAC&R industry initiative.

CSIRO is Australia's national research agency and innovation catalyst. It is in the top 10 applied research agencies globally. It is Australia's largest patent holder and has spun out more than 150 companies. CSIRO has an interest in 34 of these companies, with a market capitalisation of $1bn and $120M in annual sales.

The Grids and Energy Efficiency Research Program offers world-class lab-testing facilities in HVAC&R. It has eight active technology licences with SMEs, and earns around one-third in royalties from IP.