



The Innovation Hub

for Affordable Heating and Cooling

Lesson Learnt Report

CSIRO Senaps data platform demonstration and development

DCH1

May 2021

CSIRO



About i-Hub

The Innovation Hub for Affordable Heating and Cooling (i-Hub) is an initiative led by the Australian Institute of Refrigeration, Air Conditioning and Heating (AIRAH) in conjunction with CSIRO, Queensland University of Technology (QUT), the University of Melbourne and the University of Wollongong and supported by Australian Renewable Energy Agency (ARENA) to facilitate the heating, ventilation, air conditioning and refrigeration (HVAC&R) industry's transition to a low emissions future, stimulate jobs growth, and showcase HVAC&R innovation in buildings.

The objective of i-Hub is to support the broader HVAC&R industry with knowledge dissemination, skills-development and capacity-building. By facilitating a collaborative approach to innovation, i-Hub brings together leading universities, researchers, consultants, building owners and equipment manufacturers to create a connected research and development community in Australia.

This Project received funding from ARENA as part of ARENA's Advancing Renewables Program. The views expressed herein are not necessarily the views of the Australian Government, and the Australian Government does not accept responsibility for any information or advice contained herein.

Primary Project Partner



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The i-Hub Initiatives



**SMART BUILDING
DATA CLEARING HOUSE**



**LIVING LABORATORIES -
GREEN PROVING GROUNDS**



**INTEGRATED
DESIGN STUDIOS**

i-Hub Lessons Learnt Report

Guidance notes for completion of the Lessons Learnt Report:

- This report is intended to be made public.
- Please use plain English, minimise jargon or unnecessary technical terms.
- Please use your organisation's branding for the report.
- The report should meet your organisation's publishing standards.
- Please use one template per each major lesson learnt and include as many as are relevant for your sub-Project. If what you learnt is more technical, this is the section to include technical information.
- The content of these Lessons Learnt Reports can be compiled (and updated, where necessary) for inclusion in the (public) Project Knowledge Sharing Report, for submission at the completion of your sub-Project.

Lead organisation	CSIRO		
Sub-Project number	DCH1		
Sub-Project commencement date	July 2019	Completion date	June 2022
Report date	14/05/2021		
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Lessons learnt

Lesson learnt #1 Non energy-based value creation opportunities for DCH						
Category	Commercial					
<i>Choose from:</i>	<i>Technical</i>	<i>Commercial</i>	<i>Social</i>	<i>Regulatory</i>	<i>Logistical</i>	<i>Other (specify)</i>
Describe what you learnt about this aspect of the Project.						
<p>Availability of building data in a central location is a powerful resource for building owners. As a result, in addition to delivery energy saving benefits, there are many value streams that can be created using DCH data. Some examples are use of data for indoor air quality management, building operational management.</p> <p>This became evident when the pilot site owners (i.e. CSIRO building managers) showed keen interest to link data health alert system outputs to their facility management system tool Coriggo. As a result, availability of DCH 'connectors' for existing building asset management and facility management tools such as Coriggo, Archibus etc will be an attractive value proposition for DCH users.</p>						
Please describe what you would do differently next time and how this would help. What are the implications for future Projects?						
Identify commonly used building operational management tools/systems and incorporate ways to link them to DCH						
If your Project learnings have identified any knowledge gaps that need to be filled, please state it below.						
Test potential non energy based value proposition of DCH with focus groups						

Lesson learnt #2 Maintaining of ground truth data for creating Brick models

Category	technical					
<i>Choose from:</i>	<i>Technical</i>	<i>Commercial</i>	<i>Social</i>	<i>Regulatory</i>	<i>Logistical</i>	<i>Other (specify)</i>

Describe what you learnt about this aspect of the Project.

Process for updating Building models : similar to management of software codes, management of building models require a central repository with version control. Updates carried out on the RDF model (TTL file) for one of the pilot sites was not reflected in the 'ground truth' CSV file used to create the RDF models. This resulted in inconsistency while searching for data and also updating of data streams. Although model creation is a collaborative exercise with domain experts, software coders, a single owner for building models is preferred.

Please describe what you would do differently next time and how this would help. What are the implications for future Projects?

Ground truth metadata used for creating building models need to be maintained in a central repository. Similar to github, any updates to this ground truth data need to be version controlled and stored in an appropriate location.

This will help in making sure any upgrades/updates to the building model are captured in the ground truth data before they are reflected in the building model.

If your Project learnings have identified any knowledge gaps that need to be filled, please state it below.

none

Lesson learnt #3 Sharing of DCH models with other research partners

Category	Technical/regulatory					
<i>Choose from:</i>	<i>Technical</i>	<i>Commercial</i>	<i>Social</i>	<i>Regulatory</i>	<i>Logistical</i>	<i>Other (specify)</i>
Describe what you learnt about this aspect of the Project.						
<p>As part of international engagement activities, DCH team have been interacting with partners in North America about ways to share building models and building data for research purposes (e.g. develop reference data sets). However, it is apparent there no firm mechanisms in place to share data that will meet all security and privacy expectations of data owners.</p>						
Please describe what you would do differently next time and how this would help. What are the implications for future Projects?						
<p style="text-align: center;">Address the knowledge gaps identified below before committing to share data between platforms.</p>						
If your Project learnings have identified any knowledge gaps that need to be filled, please state it below.						
<p>Develop building model, building data anonymization methods that can be used in interacting with data platforms of similar nature for research data sharing purposes.</p> <p>Develop data sharing agreements with data owners that would support future use of DCH data for research purposes.</p>						