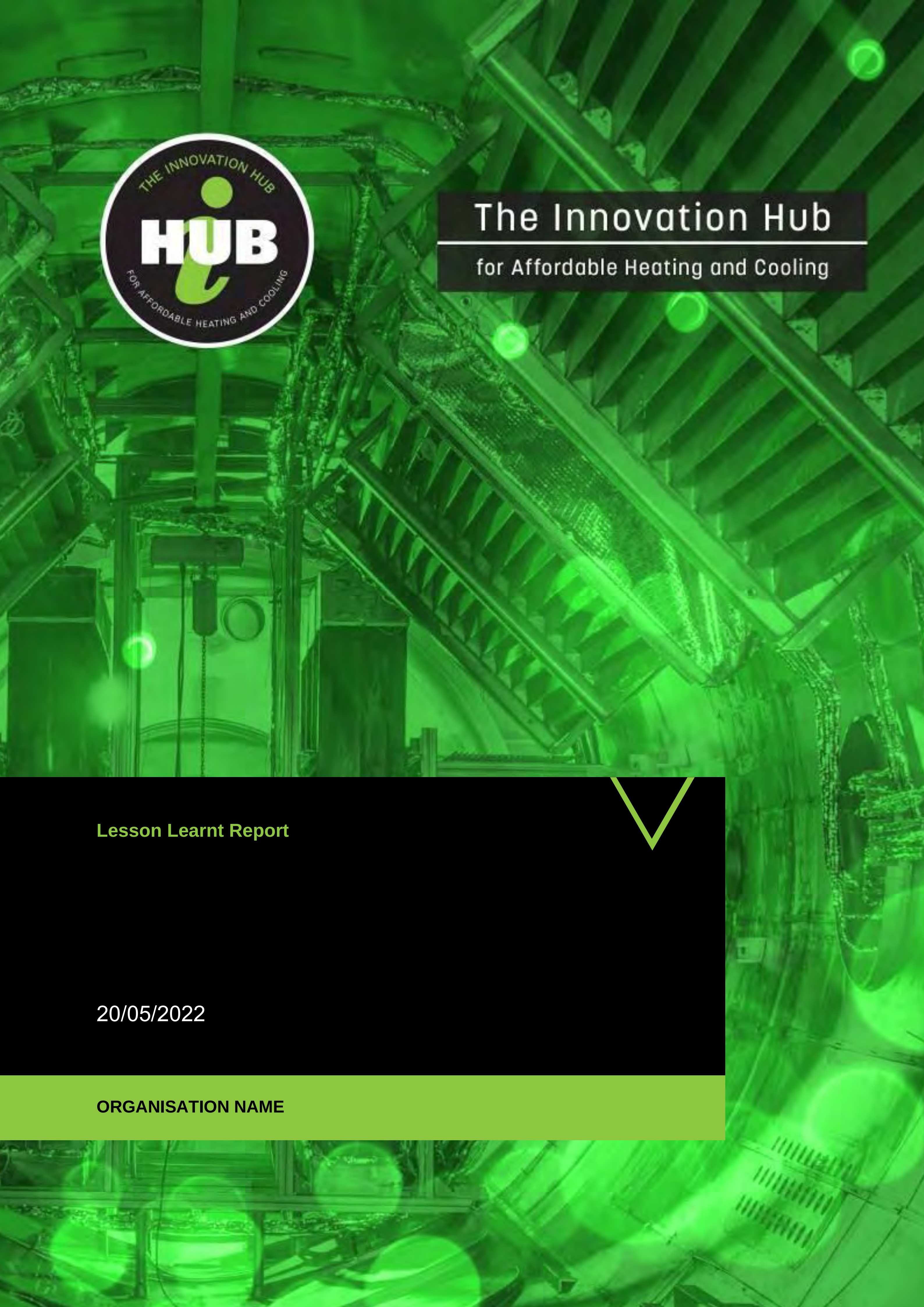

The Innovation Hub

for Affordable Heating and Cooling

Lesson Learnt Report

20/05/2022

ORGANISATION NAME

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

[logo]

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	Exergenics		
Sub-Project number	DCH10		
Sub-Project commencement date	01/07/2021	Completion date	25/04/2022
Report date	20/05/2022		
Contact name	Iain Stewart		
Position in organisation	Founder & Chief Executive Officer		
Phone	+61422443307	Email	iain.stewart@exergenics.com

Lessons learnt

<table>
<tr><td>Lesson learnt #1</td><td colspan="6">Documentation</td></tr>
<tr><td>Category</td><td colspan="6">Technical</td></tr>
<tr><td><i>Choose from:</i></td><td><i>Technical</i></td><td><i>Commercial</i></td><td><i>Social</i></td><td><i>Regulatory</i></td><td><i>Logistical</i></td><td><i>Other (specify)</i></td></tr>
<tr><td colspan="7">Describe what you learnt about this aspect of the Project.</td></tr>
<tr><td colspan="7">The data contained in any data warehouse requires interpretation in order to extract value, including the DCH. The current data collection and storage process does not yet include a focus on cataloging ‘metadata’ and therefore additional knowledge sources need to be interrogated in order to fully interpret the meaning and context of the data. This is currently achieved through the review of screenshots from the BMS, site documentation, specifications and drawings in order to locate the clues needed to bring meaning to the dataset.</td></tr>
<tr><td colspan="7">Please describe what you would do differently next time and how this would help. What are the implications for future Projects?</td></tr>
<tr><td colspan="7">As part of the process of storing operational/telemetry data for a building the individual equipment metadata (such as location, equipment hierarchy, nameplate information, model number, serial number) should be located, tagged and stored in the data warehouse.

As an interim step the DCH operators may consider bulk storage of the resources typically used to source the metadata so that users of the DCH can attempt to locate the information autonomously. A feedback loop could be created to allow the user to input the metadata values into the DCH through an input function - creating efficiency for the DCH operators and providing value to future users of the DCH.

The implication for future projects is that the data is easier to work with, more inferences can be made and therefore more value extracted from the data stored in the DCH</td></tr>
<tr><td colspan="7">If your Project learnings have identified any knowledge gaps that need to be filled, please state it below.</td></tr>
<tr><td colspan="7"></td></tr>
<tr><td colspan="7">Please include any other information you feel is relevant or helpful in sharing the knowledge you learnt through this stage of the Project. This may be qualitative or quantitative and may include a graph, chart, infographic or table as appropriate.</td></tr>
<tr><td colspan="7"></td></tr>
</table>

Lesson learnt #2 Covid-19

Category	Social					
Choose from:	*Technical*	*Commercial*	*Social*	*Regulatory*	*Logistical*	*Other (specify)*

Describe what you learnt about this aspect of the Project.

The community response to covid-19 has meant that building utilisation has changed significantly - in general occupancy has dropped as individual occupants select working from home arrangements in favour of commuting to a place of work. The data collected from this sub-project only contained data from ‘the covid period’ and therefore did not fully represent the ‘normal’ operation of the building. This made it difficult to make inferences on how the building ‘should’ respond and therefore use the data to optimise the future state of the building.

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

In order to improve the dataset the DCH operators could consider:

- Record and store building occupancy data
- Record and store local public holiday
- Record and store normal operating hours
- Record and store longer data sets to allow data users methods that can exclude factors related to covid-19

The implication for future projects is that the data is easier to work with, more inferences can be made and therefore more value extracted from the data stored in the DCH

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

Please include any other information you feel is relevant or helpful in sharing the knowledge you learnt through this stage of the Project. This may be qualitative or quantitative and may include a graph, chart, infographic or table as appropriate.