The Innovation Hub
for Affordable Heating and Cooling

Final Lessons Learnt Report

Healthcare Living Laboratory- Queensland Children's Hospital

Project LLHC4

May 2022

Queensland Children's Hospital

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.

Primary Project Partner

Final Lessons Learnt Report: Queensland Children's Hospital Living Laboratory

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	Queensland University of Technology		
Sub-Project number	LLHC4		
Sub-Project commencement date	1 July 2019	Completion date	30 June 2022
Report date	27 May 2022		
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Lessons learnt

Lesson learnt #1	Hospital design and data access

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

Describe what you learnt about this aspect of the Project.

At times, long lead times may be required to access hospital sites for implementing technology. Data requirements can potentially be a road block based on what data is required for a particular technology compared to what data is available at a particular site or location.

One example, we attempted to implement chilled water temperature setting optimisation, however, there is no sufficient secondary or tertiary energy data available for the optimisation to evaluate energy savings in chiller operation vs energy increases in pumps/air handling units/fan coil units due to increased flow, i.e., no sufficient energy metering points available for buildings' air handling units or fan coil units.

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

It is crucial to get design and construction right at the beginning to allow data access for ongoing energy optimisation or continuous improvement to happen.

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

Perhaps energy measurements investment decision matrix (hierarchy or priority lists) are needed for health infrastructure design guidelines, for example, a list of absolutely needed metering points and a list of desirable metering points. This decision matrix probably needs have trade offs between data access, investment costs and returns.

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.

Lesson learnt #2	Preparation for private sectors working in healthcare facilities

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

Describe what you learnt about this aspect of the Project.

Healthcare facilities are health and medical services oriented. It may take some time for new companies or private sectors to learn the contracting process, risk evaluation and management system, documentation, and complete required health, safety and environment induction.

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

For future projects, it may be beneficial to work with companies who have experience in healthcare facilities, for example subcontractors involved with existing or previous healthcare projects.

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.

Lesson learnt #3	Regular catch-up to build up rapport

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

Describe what you learnt about this aspect of the Project.

Major hospital sites often have multiple buildings onsite with complex building management systems and engineering services teams.

Building rapport with key personnel on project collaborator's site is essential to ensure project's success.

Hospital engineering personnel are usually very busy and frequently not able to contribute as much as they would like.

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

Similar to this time, for future projects, it may be a good strategy to have regular catch-ups with site key personnel who have in-depth engineering system knowledge and influence over operation. In this way, project health is regularly reviewed and potential issues can be identified and resolved at early stages.

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.