LOW CARBON LIVING CRC

Adelaide Living Laboratory

Progress update: Co-Creation Toolkit Project

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Peer Review Statement

This document has not been peer reviewed and is intended solely as a report on the progress of an ongoing project.

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Acronyms and abbreviations

CRCLCL	Cooperative Research Centre for Low Carbon Living
ALL	Adeliade Living Laboratory
ENoLL	European Network of Living Laboratories
ICT	Information and Communications Technologies
IAP2	International Association for Public Participation

Executive Summary

Co-creation and the Adelaide Living Laboratory

Co-creation is a term used to describe a design process where a variety of stakeholders, beyond those that would traditionally be involved in a design process, participate in an iterative and design led approach to solving a shared challenge.

To date, this has largely been restricted to ICT and Health Care product design and service delivery, but the Adeliade Living Laboratory is looking to explore the application of co-creation methods and techniques to urban scale design challenges.

The toolkit document

The draft version of the toolkit document developed for this project is an analysis of existing tools and methods that have been applied by other Living Laboratories around the world such as .

Tools have been examined and through a thematic analysis distilled into a draft document that will be tested through a PhD research project that is part of the Cooperative Research Centre for Low Carbon Living and the Adeliade Living Laboratory project.

The tools have been analysed for a series of critical data points, including their complexity, suitability to various group sizes, the kinds of outputs they are likely to produce, and a number of other indicators that will make their application simpler for urban scale challenges.

The toolkit is intended as a working document that is responsive to feedback and in many ways is co-created.

Introduction

In recent years, climate change has emerged as a key issue for governments and policy makers around the world. With more people than ever living in cities, the carbon impact of urban development has been identified as a key area for action. One of the responses within government policy and planning to the need for lower carbon cities has been the popularisation of creating low–carbon eco-precincts.

The eco-precinct in urban development requires the cooperation of a wide variety of disciplines for their construction as well as an ongoing commitment from users to ensure their successful operation. To date however, there is not an established methodology for facilitating this cooperation and involvement. This means that there is often a disconnect between the aspiration for, and the development and ongoing operation of eco-precincts. One of the ways in which this disconnection has been overcome in other disciplines has been through the involvement of a broad range of stakeholders, including end-users, in a co-creative process as a part of a living laboratory.

Co-creation is a methodology that is being developed in real-time by participants in the European Network of Living Laboratories (ENoLL). Living laboratories are defined by the European Commission as 'open innovation environments in real–life settings, in which user–driven innovation is integrated within the co-creation process of new services, products and infrastructures' (European Commission, 2009, p.50). To date, this has been largely restricted to Information and Communication Technology (ICT) product development and healthcare service delivery with very few laboratories focussing on the build environment, and even fewer focussing on issues of sustainability.

The co-creation project within the CRC is looking to explore the application of co-creation as a methodology to urban scale development projects.

Co-creation is not a new concept, and can be traced back to participatory design in Scandinavia in the 1970s and experimental processes at MIT in the 1980s and 90s. While the philosophical concepts behind co-creation are a universal (inclusion, democracy, participation etc.), the tools required for its application are discipline specific. This has led to a vast number of toolkits and resources being developed that are applicable to various disciplines. The toolkit developed as a part of this project, is an initial step in a larger project being run by the Adelaide Living Laboratory and the Cooperative Research Centre for Low Carbon Living (CRCLCL), to evaluate the applicability of the co-creation methodology to low-carbon urban development.

The co-creation project within the CRC is looking to explore the application of co-creation as a methodology to urban scale development projects and therefore requires tools and resources that are specific to this challenge. The co-creation toolkit draft is a collation of tools from a large number of toolkits, presented in a contiguous format.

The toolkit itself is designed to provide quick access to key data about each of the tools, as well as a succinct description, tips on its application, and links to similar tools in other toolkits. The toolkit is a working document designed to be integrated into a feedback process. The final form of the toolkit will be co-created, with feedback and input from both the facilitators who are applying it, and from particiapnts in the sessions in which it is used.

The pages that follow contain text developed for the preface section of the toolkit document. The draft version of the toolkit will be made available via the CRCLCL website once human research ethics approval has been granted by the University of South Australia.

Toolkit Background

Carbon emission reduction is a global issue. How we might address this issue at a national and local scale is a question that raises tensions across industry, business, and public policy.

Complex challenges like reducing the carbon footprint of our urban environments require a cooperative and collaborative approach that can bring together people from a vast range of backgrounds and disciplines. The Adeliade Living Laboratory and the Cooperative Research Centre for Low Carbon Living are seeking to do this through a co-creative process.

Co-creation facilitates Public, Private, People Partnerships (4P) that involve as many key-stakeholders as possible throughout the development of a product, service or environment.

By involving multiple stakeholders in the development process, co- creation has the potential to create bahaviour change more readily than traditional top-down proceedures, and is measurable through a range of measures that go beyond traditional economic models.

The Living Laboratories Approach

Living Laboratories are real-world test-beds for the development of new ideas, products or services. Using real people and environments to test ideas makes the approach more technically difficult, but generally results in outcomes that better meet the needs of end users. Living Labs engage with stakeholders during the entire design and development process through a process of co-creation.

The European Network of Living Labs (ENoLL) is an international organisation that was formed in 2006 to facilitate cooperation between a network of these Living Laboratory projects. Although as the name suggests it was initially limited to European participants, ENoLL has now grown to include 370 Living Labs around the world (figure 1).

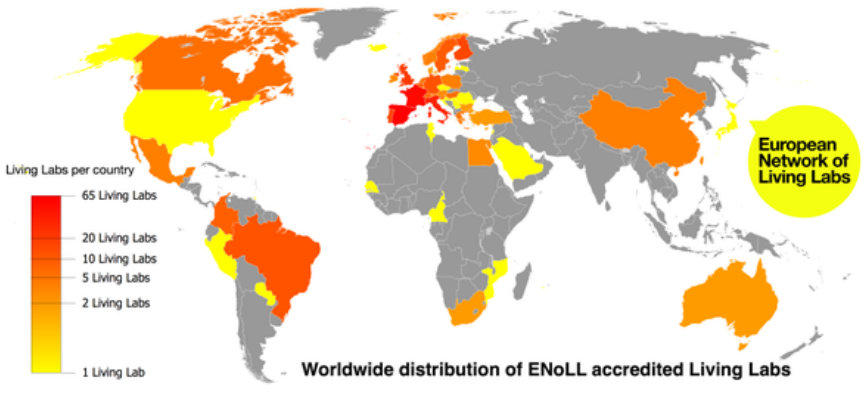

Figure 1: Worldwide distribution of ENoLL accredited Living Labs (reproduced from www.enoll.org)

The Living Laboratories approach extends beyond ENoLL but for the purposes of this research project, only those that are ENoLL members have been reviewed. To date, the majority of Living Lab projects have been focussed on the development of Information Communications Technologies (ICT) and healthcare procedures (see figure 2 on next page), but recently there has been a push to expand Living Lab projects into social- and urban-design challenges.

The Adelaide Living Laboratory project will be one of the first living labs to use a co-creation approach for design challenges at an urban scale.

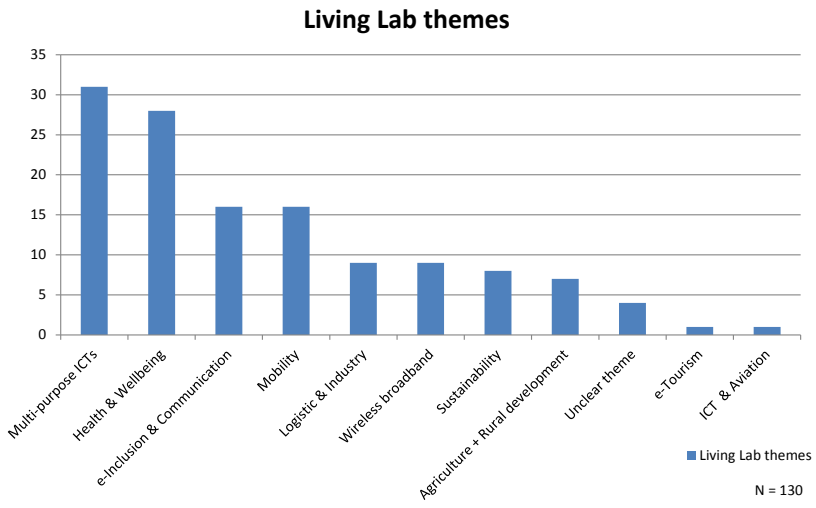

Figure 2: Themes of living laboratories (reproduced from Sauer, 2013)

What is co-creation and what isn't co-creation?

Henry Ford famously joked that if he had asked his customers what they wanted, they would have said a faster horse. We hear this a lot when talking about companies like Facebook, and Apple, but asking what people want is very different to working with them to discover and design solutions for their needs. Even within companies like Facebook and Apple that are known for 'the lone genius' approach where a lone entrepreneur is assumed to understand everything that is needed by the company and control all developments, most new developments happen through collaborations.

Co-creation is not crowd-sourcing. Crowd-sourcing assumes that a solution is out there somewhere and tries to cast a net wide enough to find it. The key to the co-creative model is that participants are being brought together to discuss, combine and build on their ideas together rather than relying on one person to have all the answers.

Thomas Edison credited his success as an inventor to the fact that he surrounded himself with a vast range of tinkerers and hobbyists. But he didn't just sit back and wait for them to generate a pool of ideas, he brought them together and worked with them as a group to develop exciting new ideas.

Co-creation is a process not a single act and can give a voice to stakeholders that are normally overlooked to build strong, resilient and engaged communities.

Terminology

Co-creation, co-design, human centred design, design thinking, co-laboratories, crowdsourcing, collaborative design, and living laboratories are interconnected and describe various approaches to an inclusive design processes.

Figure 3 provides a comparison between some of the key aspects of each of these terms, but they are all very similar. One of the key features of co-creation that this table highlights is that it combines iterative design processes with consultation and collaboration.

	Co-creation	Co-design	Human Centred Design	Design Thinking	Co-Laboratory	Crowdsourcing	Collaborative Design	Living Laboratories
Industry participation	X	X	X	X	X		X	X
Research participation	X				X			X
End-user participation	X	X	X		X		X	X
Community participation	X		X		X	X		X
Framework	X			X			X	X
Process	X	X	X		X	X		
New-Product-Development	X	X		X		X	X	X
Procedure development	X			X			X	X
Idea generation	X				X	X		X
Participatory process	X	X			X		X	X
Iterative 'design thinking'	X	X	X	X				
Technical document			X					

Figure 3: Table comparing various related terminologies

Design Thinking

The term ‘Design thinking’ describes an iterative and feedback driven approach to finding solutions and can be applied to almost any problem.

Path A in figures 4 and 5 contrasts the traditional linear approach to decision making with a design thinking approach. A design thinking approach allows iterative responses to challenges and all aspects of a proposed solution to be re-evaluated at any time. This is process of exploring multiple options is commonly referred to as ‘the messy front end’ of the design process.

When looking through the lens of efficiency, a linear approach might appear to make sense, but the iterative process is far more likely to yield innovation. Thomas Edison famously described innovation as being 99% perspiration and 1% inspiration. According to Tim Brown (CEO and president of IDEO) the perspiration Edison was referring to is the iterative design process where a huge number of ideas are pursued in order to generate a relatively small number of solutions.

Thomas Edison famously described innovation as being 99% perspiration and 1% inspiration

Tim Brown describes three areas that a design process moves through: Inspiration, Ideation and Implementation. These areas are not necessarily moved through in sequence, leading to a series of feedback loops and iterations that give the ‘messy front end’ its distinctive funnel shape.

Path B in figure 4 shows the heirarcy of a traditional top-down business model. Responsibility for innovation and for decision making is given to management rather than the people who will actually be applying the innovations. In contrast, Path B in figure 5 is not a path at all and demonstrates how a co-creative approach requires everyone work together to understand the challenges and to develop the solutions.

Through a co-creative process, the ideas, creativity and ingenuity of a much larger team of people each with unique knowledge of the problem can be accessed, and solutions developed that better address the problem.

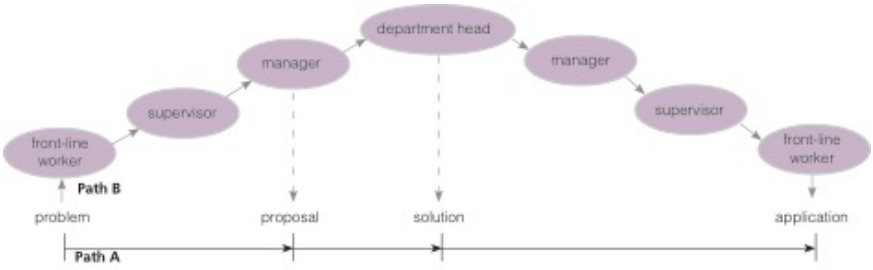

Figure 4: Heirarchical problem solving method

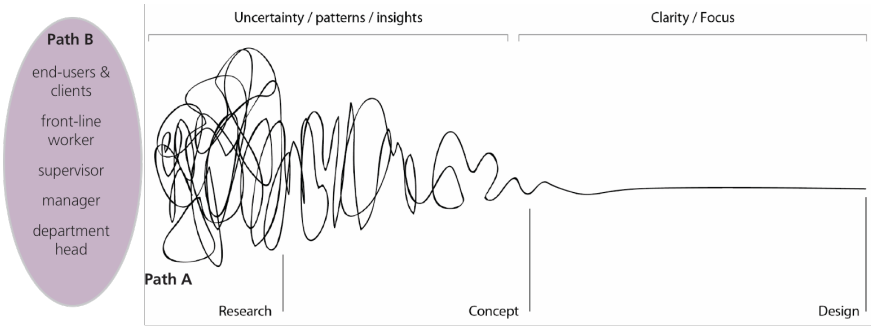

Figure 5: The messy front end of design thinking.

The Toolkit

This toolkit is structured in four sections: An overarching planning section, followed by sections for the 3 spaces of design thinking. This toolkit is designed to be applied right at the start of a co-creative project and used to design the process. The tools it contains are restricted to generic approaches that can be applied to any project and can be used to facilitate interaction with more technical and project specific processes and tools.

Planning

Tools in the planning section are primarily applicable as devices for strategically planning co-creation activities across all stages of the design process. Ideally these tools are used in a co-creative way with a group of key stakeholders and facilitators. Planning is not limited to the start of the process. These tools and their application should be continually re-visited and refined based on the outcomes of each of the co-creation sessions.

Collecting

Tools within this section are primarily aimed at gathering information and building a clear understanding of the challenges that need to be addressed by the co-creation team. As well as enriching a pre-planned design process, opportunities for more projects and new participants can be highlighted by these tools.

Co-creating

This is the core of the Living Laboratory process and tools in this section create opportunities to engage large numbers of stakeholders and users in the design process. They are primarily focussed on allowing all participants to make a contribution regardless of their professional or technical backgrounds.

Analysing

These tools are focussed on unpacking and exploring the outcomes of the co-creation process to inform the ongoing work of the living laboratory. While being focussed on outcomes and reporting, these tools can also be used to inform the planning of future co- creation activities.

The Tools

ENoLL has three levels of membership: associated, adherent and effective. Associated members are organisations that pay a membership fee to gain access to ENoLL member activities but do not necessarily represent the Living Lab model. Adherent members are organisations that have been been approved through the ENoLL selection process and have been determined to be Living Laboratories. This requires the demonstration of how the project goals of the organisation align with the philosophy and goals of a Living Laboratory as set out by ENoLL association. Effective members are organisations that are both approved as Living Laboratories by the ENoLL association and pay membership fees.

Because this project is focussed on co-creation in living laboratory activities, this project reviewed the documentation submitted to ENoLL by members at only the Effective and Adherent levels. As of April 2015 there were 130 Adherent member organisations and 20 Effective member organisations. It was discovered that many of these laboratories focus on publishing project and process outcomes, rather than details about their processes. An area in which substantial information about process is supplied however is in 2013 and 2014 annual Living Lab Summer School conference proceedings.

Despite the enormous variety of Living Laboratory research tasks underway, there was a relatively small number of toolkits that were declared as having being used. A review of the toolkits described by ENoLL members was combined with a desktop survey of other facilitation toolkits to establish 114 unique co-creation tools. Despite this variety, the tools were contained in only 14 toolkits (table 1).

Table 1 Toolkits analysed as a part of the creation of the Adeliade Living Laboratories Co-creation toolkit draft.

Toolkit	Source
MyNeighbourhood Handbook	MyNeighbourhood Living Laboratory (ENoLL)
People's Voice Handbook	Luleå University of Technology (ENoLL)
The Living Lab Methodology Handbook	Luleå University of Technology (ENoLL)
Supplements to the Living Lab Methodology Handbook	Luleå University of Technology (ENoLL)
Design Kit	IDEO
Human Centred Design Toolkit	IDEO
Bootcamp Bootleg	Institute of Design at Stanford
Innovation Teams and Labs: A practice Guide	NESTA
Busines Model Generation Canvas	Business Model Generation
Active Design Handbook	Centre for Active Design
Backcasting	Naural Step
The World Café	Haley Jones
The CAMRA toolkit	Australian Government; Australia Council for the Arts; University of Technology, Sydney; University of Woolongong; University of New England; Local Government NSW; Regional Arts NSW
Service Design Tools Toolkit	Service Design Tools
Easy consultation toolkit	Shared Care Scotland
IAP2's Public Participation Specturm	International Association for Public Participation
Healthy Spaces and Places	Heart Foundation of Australia
Effective Engagement Toolkit	Department of Sustainability and Environment, Government of Victoria
Urban Design Toolkit	Ministry for the Environment, New Zealand

These toolkits featured some repetition of tools, but were included in this initial desktop survey because they contained one or more unique tools or approaches. Toolkits that only replicated tools that had been described elsewhere were excluded from this list, as were toolkits tailored for specialised applications. From the remaining toolkits, 114 tools were extracted and key data points analysed.

These data points included:

- The type of tool: whether it was a for planning, collecting, generating or analysing.
- The stage of a design process it was most applicable to (based on Tim Brown's design thinking principles): Inspiration, Ideation, or Implementation.
- What type of participants the tool could potentially be used to foster collaboaration between: Government and Researchers, Industry, and/or Community.
- The number of participants the tool was suited for application with
- An estimation of the difficulty of applying the tool
- An indication of where the tool might be applicable: insutu, off-site, or both
- An estimated time requirement
- The level of expertise required by the facilitator or facilitation team
- The types of data that the tool could be used to generate
- An indication of the resources that would be required to utilise the tool
- A brief synopsis
- The location of further or supplementary information
- And an indication of how useful it may be to co-creation projects involving the urban scale and the built environment.

The data for this assessment was gathered from the information presented across the sampled toolkits. Where data points were missing, they have been supplemented with information from duplicate or similar tools in other toolkits.

The following pages contain a snap shot of the outcomes from this process. The full results of this analysis can be seen in the draft toolkit where this data has been translated into a visual rather than numerical or tabular format. The design of the functional and visual layoutsof this document is intended to be subject to the same iterative co-creation process as the data it contains. Examples of three possible graphical approaches are demonstrated in Figures 6, 7 and 8.

Table 2 is a combined list of the tool names that were found in the toolkits surveyed, and Table 3 provides an example of the data gathered about these tools in tabular form.

There are a number of tools in Table 2 that have ambiguous or grammatically unusual titles, however, these are the names that were used in surveyed toolkits. It is anticipated that these titles will be one of the areas that requires attention during the ongoing co-creation of the CRC toolkit, however, this is not something that can be pre-empted at this stage.

Similarly, the snapshot of data shown in Table 3 summarises the information in the existing toolkits. The translation of this data into a graphic format can be seen on the individual tool pages of the draft toolkit. Because there were inconsistencies and discrepancies between the data presented across multiple toolkits, the information described in Table 3 is a critical focus of the feedback process that has been designed to refine the draft version of the toolkit.

By surveying and collaborating with real-world practitioners, working on real-world applications of low-carbon-living co-creation projects, this toolkit has an opportunity to become a document that reflects real-world practice. This collaborative process will tailor the toolkit to the socio-cultural and socio-technical setting of low-carbon urban development in Australia.

Table 2: Tools collated and analysed for urban co-creation toolkit

Stakeholder map	Define your audience	Carry out the focus-groups	Scenarios
Ten I's	Recruiting Tools	Checklist for Discover Needs in Phase	Collage
Workshop plan and report	Innovation Team Worksheet	Carry out the data-collection session	How Might We Questions
Checklist for concept design	Capabilities Quicksheet	Stoke	How Might We?
Define Success	Build a team	Composite Character Profile	Point-of-view Madlib
Roadmap	Project Plan	Share inspiring stories	Post-it session
Determine what to prototype	Funding Strategy	Aspirations exercise	Bodystorming
Why, who and how?	Staff your project	Community Characters Exercise	Dramatization
Checklist for planning the intervention	Sustainable revenue	Factors and Foces Exercise	Live Prototyping
Checklist for the Discover Needs Of Phase	Business model canvas	Questionnaire	Personas
Extremes and Mainstreams	Ways to Grow Framework	2 X 2 Matrix	Roleplay
Measure and Evaluate	Resource flow exercise	Group interview	Testing With Users
Guided Tour	Journey Map	Backcasting	Grafiti Sheets
Immersion	Journey of an offering	Lego Serious Play	Issue Cards
Interview	Neighbourhood Context Worksheet	The World Café	Future Workshop
Peers observing peers	Sidewalk Context Worksheet	Highlights Worksheet	Keep Iterating
Secondary Research	Timelines	Brainstorm Rules	Utility and Usefulness Evaluation
User Camera Study	Transparency Guide	Checklist for prototype design	Usability Evaluation
Guerrilla Observation	Expert interview	Analogous Inspiration	User experience evaluation
Urban analysis	Contextual enquiry / shaddowing	Co-creation Session	Bundle Ideas
Get Feedback	Cultural Probes	Mash-Ups	Create frameworks
Keep Getting Feedback	Mobile Probes	Top Five	Saturate and Group
Storyboard	Video observation	Build a Brick Barrier	Create a pitch
Identity Power and Politics	Pilot	Card Sort	Design Principles
Conversation starters	Brainstorm	Rapid Prototyping	Download your learnings
Draw It	Create a concept	User Driven Prototyping	Feedback Capture Grid
Get Visual	Find themes	Wizard of Oz Prototyping	Heuristic Evaluation
How? What? Why?	Powers of Ten	Photography Exhibition	Build Partnerships
Gut Table Check	Integrate feedback and iterate		

Table 3: Example of data collected to inform toolkit development.

Tool Name	Mode	Type	Design Space			Participant backgrounds			No. of participants	Difficulty	Venue Suitability		Time Req.	Facilitator	Data		Special Resources	Synopsis	Tool location(s)	Urban usefullness
			Inspiration	Ideation	Implementation	Public (Gov/Uni)	Industry	Community			In-Situ	Workshop			Quantitative	Qualitative				
Key:	1. Planning 2. Collecting 3. Generating 4. Analysing	1. Workshop concept 2. Worksheet or artefact 3. Interview technique 4. Other	1. Somewhat applicable 2. Moderately applicable 3. Highly applicable			1. Somewhat applicable 2. Moderately applicable 3. Highly applicable			1. <7 2. <12 3. <25 4. >26	1. Easy 2. Medium 3. Hard	1. Somewhat applicable 2. Moderately applicable 3. Highly applicable		1. <60 mins 2. 1-4 hours 3. Full day 4. 2+ Days	1. Open 2. Specific	1. Somewhat likely 2. Moderately likely 3. Highly likely					1. Very low 2. Low 3. Medium 4. High
Stakeholder map	1	1	3			3	3	3	3	2		3	1	1	1	2		Actors are placed on a map. Connection lines are drawn and their relationships specified.	MyNeighbourhood Handbook p. 11	4
Ten I's	1	1	3			3	3		4	1		3	1	1	1	1		Explanation of 10 I's that build a user engagement strategy. Identify, Inform, Interact, Iterate, Involve, Influence, Inspire, Illuminate, Integrate, Implement	People's Voice Handbook p. 12 - 21	4
Sidewalk context worksheet	2	2	3	2		3	3	2	4	1	3	2	2	2	2	2	Printed worksheet	Worksheet for recording existing footpath dynamic. Completed artefact could be adapted and used as a comparison tool to explain proposals in workshops	Active Design Handbook p. 79	2
Lego serious play	3	1	3	3		3	3	3	4	1		3	2	1		3	Lego	Lego is used as a tool to allow all participants to contribute regardless of technical skills in design when discussing urban form.	MyNeighbourhood Handbook p. 10 www.servicedesigntools.org/tools/46	4
Analogous Inspiration	3	1	1	3	1	2	2	2	3	2	3	3	1	1	1	2		Define a series of features / goals, then explore unrelated situations that share these characteristics	http://www.designkit.org/methods/6 Bootcamp Bootleg p.12	3

Figure 6: Example of how the information in Table 3 can be translated into a graphical representation (Version 1)

Scaling thinking

COLLECTING

Description

Changing the scale of a discussion can allow workshop participants to explore ideas and concepts that would otherwise not be considered. This can involve changing the scale of the implications of a decision, or the variables that are used to define design challenges.

The Human Centred Design toolkit features a worksheet, that is suitable for use with either individuals or groups. It provides a visual cue and worksheet for participants to explore the local, regional and global influences and implications of a behaviour or decision. This worksheet can be found on the reverse of this sheet.

The Institute of Design at Stanford suggest using a "Powers of Ten" approach to redefining constraints of a design challenge: e.g. if a solution is $1Million or $1.00, if it takes 10 years or 1 day.

Tips

This approach can be useful where there is a desire to identify "small wins" that can be implemented quickly and/or cheaply.

Quick Stats

Medium

<60 Mins

<7 8 - 11 12 - 30 30+

Research Industry Community

Workshop In-Situ

References / Further Reading

"Factors and forces" Human Centred Design toolkit pp. 170-171

"Powers of Ten" Bootcamp Bootleg, p.18

Materials

Worksheet print out

Pens

http://i.istockimg.com/file_thumbview_approve/51634632/2/stock-photo-51634632-one-day-it-is-going-to-be-mine.jpg

http://i.istockimg.com/file_thumbview_approve/43186582/2/stock-photo-43186582-choosing-a-place-on-africa-on-globe.jpg

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Figure 7: Alternate graphic representation technique to be tested as part of ongoing development Version 2)

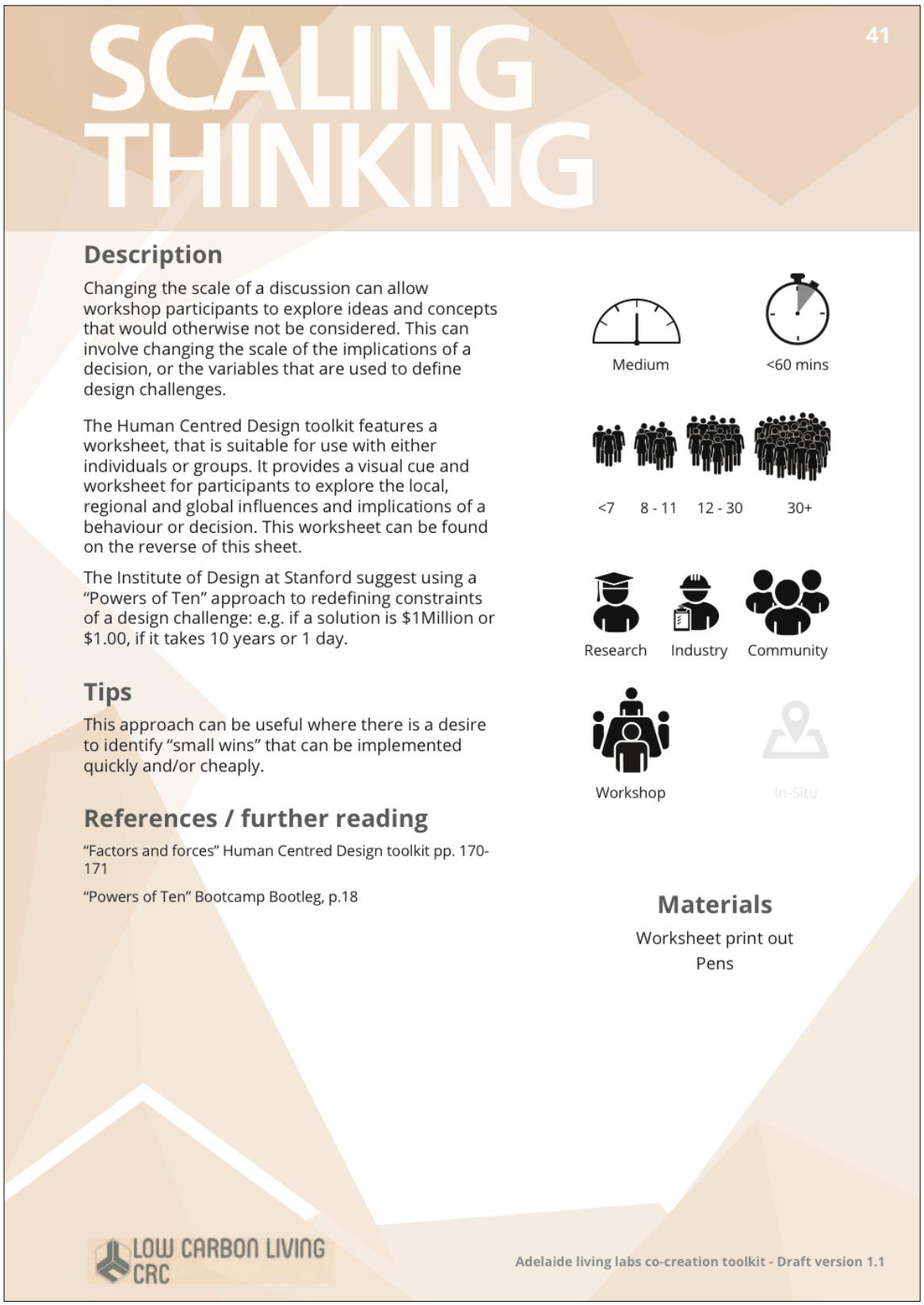
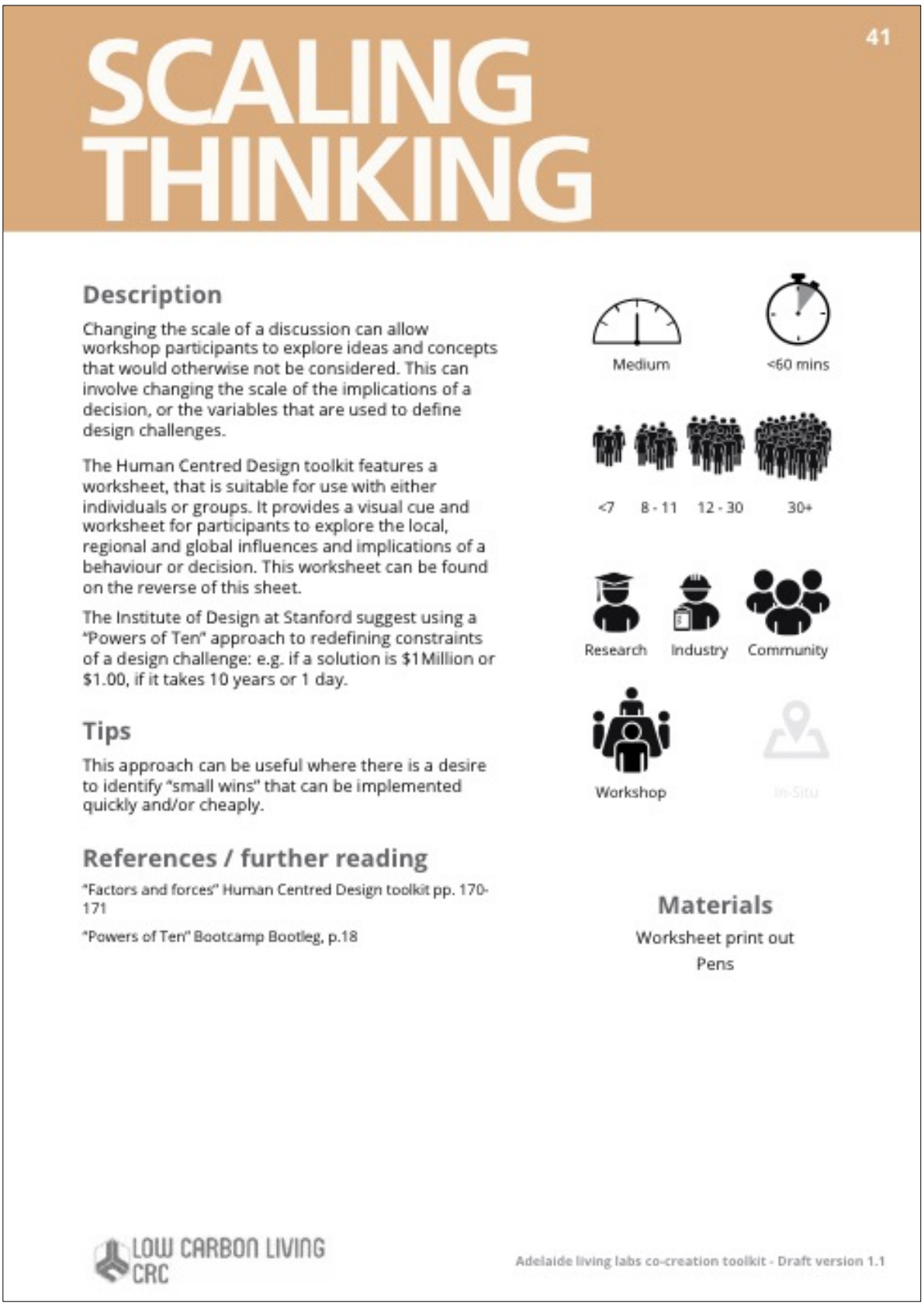


Figure 8: Alternate graphic representation technique to be tested as part of ongoing development (Version 3)



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