

## **Identifying challenges and co-imagining futures for a design for health network**

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# Design for Health

## Identifying Challenges and Co-Imagining Futures for a Design for Health Network --Manuscript Draft--

<b>Full Title:</b>	Identifying Challenges and Co-Imagining Futures for a Design for Health Network
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<b>Abstract:</b>	<p>For the emerging field of Design for Health (D4H) to realise its potential, it is necessary to identify and address existing challenges faced by its community. The few papers that have identified challenges and opportunities in Design for Health confirm that healthcare is a challenging environment for designers to work in. In part this is because design is often misunderstood by health professionals. This paper describes a study that sought to understand the challenges and opportunities for a future D4H Global Network as identified by workshop participants spanning different backgrounds, contexts, and countries. Qualitative data from 59 participants were collected during the D4H Symposium 2019 workshop and analysed using a thematic method. Practical constraints identified by participants included lack of resources and differing regulatory and governance frameworks which acted as barriers to building and participating in transdisciplinary projects in this space. However, participants also acknowledged that broader philosophical barriers arising as a consequence of siloed perspectives and different research paradigms between design and health were equally problematic. Despite these challenges, the overall findings were inherently optimistic as participants co-imagined broad opportunities for a future global network and collectively identified targeted solutions for 'breaking the "normal" and 'doing things differently'.</p>
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## Identifying Challenges and Co-Imagining Futures for a Design for Health Network

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For the emerging field of Design for Health (D4H) to realise its potential, it is necessary to identify and address existing challenges faced by its community. The few papers that have identified challenges and opportunities in Design for Health confirm that healthcare is a challenging environment for designers to work in. In part this is because design is often misunderstood by health professionals. This paper describes a study that sought to understand the challenges and opportunities for a future D4H Global Network as identified by workshop participants spanning different backgrounds, contexts, and countries. Qualitative data from 59 participants were collected during the *D4H Symposium 2019* workshop and analysed using a thematic method.

Practical constraints identified by participants included lack of resources and differing regulatory and governance frameworks which acted as barriers to building and participating in transdisciplinary projects in this space. However, participants also acknowledged that broader philosophical barriers arising as a consequence of siloed perspectives and different research paradigms between design and health were equally problematic. Despite these challenges, the overall findings were inherently optimistic as participants co-imagined broad opportunities for a future global network and collectively identified targeted solutions for '*breaking the "normal" and "doing things differently"*'.

Keywords: future opportunity; challenge; network; transdisciplinary  
collaboration

## **Introduction**

While design and health have always been intertwined (Chamberlain and Craig 2017), Design for Health as a field that brings these two diverse disciplines together is still developing and evolving, and is yet to reach its full potential. Design for Health focuses on using creative and divergent thinking to tackle ‘wicked problems’ (Buchanan, 1992) ingrained within complex hierarchical and rigid evidence-driven health structures (Groeneveld, Dekkers, Boon, and D’Olivo 2019; Ramos, Bowen, Wright, Ferreira, and Forcellini 2020; Reay et al. 2016). This requires a level of understanding and collaboration across very different cultures and practices that the disciplines of design and health (in their broadest sense) span, but that neither can solve in isolation.

The need for a joint approach is evident from developments at various levels. At the government level, innovation, creativity, and collaboration are now seen as pillars of future healthcare (Minister of Health 2016; Ministry of Business Innovation and Employment & Ministry of Health 2017; NHS 2015). The *Design for Health* journal and the Design for Health symposium and conference now offer an exclusive place where professionals working in this space can share their research and practice, and develop understanding and collaboration through dialogue and debate.

Some of these events have already started to be explored as a vehicle for research on the challenges and opportunities in design for health. Cunningham and Reay (2019) used a qualitative survey method to explore the opportunities and constraints of having a design lab embedded in a hospital environment. Through a series of workshops at various conferences and gatherings in Europe and the UK, Groeneveld et al. (2018) explored the challenges that designers and design researchers face when working on healthcare projects. These authors confirm the notion that

healthcare is a challenging environment for designers to work in, and that design is often misunderstood by health professionals. However, the reported insights, while valuable, were not a product of collective reflection of designers and health practitioners eager to co-imagine what the future for this field might be.

More recently, Nakarada-Kordic et al. (2020) reported on critical reflections on individual and collective experiences of two multidisciplinary university-based teams engaged in design for health work – a design team and a person-centred rehabilitation research team of health researchers and professionals. The teams identified the lack of knowledge, understanding and shared language between the two disciplines, differing expectations of involvement, as well as constraining systems and structures as substantial challenges for Design for Health collaborations. These were however counterbalanced by a shared sense of excitement, hope, and passion for the possibility that a design for health collaboration brings, and the need to embrace risk-taking.

The culture across and within design and health is nuanced and it is important to build an understanding of these nuances for the different but complementary approaches to come together and explore ways to collaboratively achieve a paradigm shift in health care (Chamberlain and Craig 2017).

The question remains as to who operates within the design for health space, (considering ‘health’ in its broadest sense - as wellbeing), in what contexts (not limited just to healthcare organizations), where to draw boundaries of the design for health field, and what are the qualities fundamental to the creation of a meaningful network.

This research sought to build understanding of what design for health collaborations currently look like and what individuals interested in or already

immersed in the design for health field consider as being important for the development of a Design for Health (D4H) network. Using a symposium as a vehicle for research, we drew on perspectives of workshop participants from health, design and other backgrounds working across multiple international contexts.

The aim was for the data from this research to be used to help establish a formal D4H network to enable future collaborations and support in this space.

This paper provides a broad overview of the identified challenges, but also opportunities and aspirations for a future D4H network.

## **Methods**

This study used a collaborative co-design approach (Sanders and Stappers 2008) to explore the perceptions of value, possible opportunities and constraints for the D4H Network.

An international transdisciplinary research team consisting of academics from two universities working at the intersection of design and health (xxx) ran a D4H Network workshop as part of the *Design for Health Symposium 2019* in Auckland, New Zealand (link to website). The symposium brought together an international audience of 83 health professionals, researchers, and designers to share ideas and experiences, raise questions, and expand thinking in terms of how design and creative practice might help tackle complex health challenges. Representation spanned a wide range of health-related disciplines, including pharmacy, physiotherapy, public health, health promotion, psychology, social work, occupational therapy, community rehabilitation, population health, child health, health policy, health charities, as well as procurement and contract management, health device manufacturing and sales, teaching, and medical writing. Similarly, various design disciplines were represented, including spatial, graphic, product, industrial, interior/exterior, user-centred, and

service design, but also animation, urban planning, and software engineering.

Attendees had the option of taking part in a diversity of workshops over the course of the two-day symposium, including a series of three replica workshops run in parallel with an explicit focus on the development of a D4H network – the focus for this paper.

The study utilized constructivist methods, in that the focus was on distinctive meanings, values, experiences and practices in the context of the network created and reflected on by the people who may one day use it.

### ***Participants***

Fifty-nine individuals selected to attend one of the three workshops. A range of different countries were represented with contingents from Europe, Australasia and North America, as well as from across New Zealand.

Participants were broadly representative of symposium participants, representing a number of sectors including industry, academia, community services, governmental and non-governmental organizations, and public and private healthcare. A small proportion of individuals were independent practitioners from across design and health, as well as design students.

A broad range of professions were represented as highlighted in the diagram below (Figure 1). Just under half of participants described themselves as coming from the discipline of design (24). Fifteen participants identified as being from a broad health background, with a number of different types of health-care practitioners represented (e.g., pharmacists, physiotherapists, procurement, occupational therapy, health promotion, etc.). People using health services were under-represented with just one person self-identifying as a service user. Two participants identified themselves

as working at the intersection of design and health – one working at university and the other for a public health organization.

Of particular interest in the context of this study was the breadth of design disciplines that were represented. The majority (all but three) of those participants who self-identified as designers were affiliated with a university.

### ***Procedure***

Ethics approval was obtained for the study (AUTEC 19/328). Due to the large number of attendees, participants were randomly allocated to one of three workshop groups, enabling smaller workshops with 15-20 participants each to take place in three locations simultaneously. In each location, the workshop was co-facilitated by two symposium organizers who guided the participants through a series of activities. In the first instance, participants were asked to contribute a visual representation of where they see themselves on their D4H journey depending on their background/profession and their workplace (i.e., ‘coming from health’ at one end, to ‘coming from design’ at the other’), starting with ‘new to Design for Health’ at one end, to ‘done lots of design for health projects’ at the other (see Figure 1). This provided an ‘at a glance’ overview of where everyone felt they currently were on the trajectory from design to health.

Insert Figure 1 here

Participants were then given time in pairs to ask each other the following questions and summarize their responses in writing: Why are you here (at this symposium)?; What design for health projects are you aware of or involved in (within your organization or workplace)?; Who are you collaborating with on these projects?; What are some of the challenges in those design for health projects?

At each workshop table (seating between 4 and 6 participants), participants were then asked to agree on and share with the rest of the group the top three challenges or issues they faced in the design for health projects they were involved in. Participants were then asked to discuss in their groups and summarize in writing what they saw as opportunities in the D4H space (Figure 2).

Insert Figure 2 here

The final activity consisted of participants at each table playing a card game, modelled on Initiate.Collaborate, an interactive game designed to bring people together to build successful collaborations (Craig, Reay, and Nakarada-Kordic 2019; [initiate-collaborate.com](http://initiate-collaborate.com)). The card game was designed specifically for the purpose of the workshop and involved the participants being guided in a step-by-step fashion through a series of timed activities to help them unpack what they individually and as a group might want out of the D4H network (Figure 3). The card game progressed in three parts: 1) a rapport-building activity – where participants described themselves through a given ‘attribute’ (e.g., ‘unique’, ‘responsible’, ‘fun’) displayed on a dealt card; 2) identifying attributes describing what the future D4H network should be - an activity that allowed participants to, through sorting, prioritizing and discussion, choose and describe the three top attributes (displayed on individual cards) for a future D4H network; and 3) defining success for the future D4H network - an activity focused on sorting, choosing and describing the top three indicators of success for a future D4H network. As with Intitiate.Collaborate, there were nine attribute and nine success cards (Figure 4).

Insert Figure 3 here

Insert Figure 4 here

### ***Data collection and analysis***

All written material generated during the workshop was collected and used as the primary source of data. Data from the workshop was summarized and analysed using the general inductive approach for the analysis of qualitative evaluation data as described by Thomas (2006) and previously used by Cunningham and Reay (2019). The process of analysis initially involved collating and sorting the individual responses to individual questions from all three workshop locations. A thematic analysis was undertaken by grouping the responses to all questions into small groups of similar ideas. These smaller groups were collated, and descriptions of themes from each group of responses were developed. Through this process a number of themes and sub-themes were developed, which are described in the following sections.

### **Findings**

A summary of the main findings in relation to professional background and motivations are first presented. This is followed with a discussion of how participants described challenges, opportunities and aspirations for a D4H network.

### ***The Design for Health journey***

When individuals were invited to plot their confidence levels on a continuum between 'new to design' and 'done lots of design for health projects', it was found that the majority of people who identify themselves as 'coming from health' cluster were more likely to be 'new' to design for health. Those who self-identified as 'coming from design' were more widely spread across the continuum.

Those identifying themselves as 'coming from health' appeared more likely to cluster themselves as being 'new to Design for Health' if they were working in the public sector (versus academia). Others positioned as 'new to Design for Health' were

more likely to have been in industry. Academics coming from both health and design seemed more confident positioning themselves as having ‘done lots of Design for Health projects’.

Regardless of background and where individuals saw themselves on the D4H spectrum, most design for health projects reported happened in healthcare organizations (such as hospitals), closely followed by in the community, but also industry, and government organizations. Table 1 demonstrates the breath of design for health projects individuals reported being involved in.

[Table 1 here]

The general sentiment expressed by participants to the question ‘why are you here today?’ was that of wanting to ‘be a part of something bigger’, ‘to connect’, ‘be inspired’, and ‘broaden thinking’. Participants reported wanting to learn about other disciplines and perspectives operating in the design for health domain, better understand the contexts in which D4H projects take place, to challenge their thinking around alternative perspectives and new approaches, to explore opportunities to apply own skills in D4H and forge new collaborations, network with likeminded people, and hear from others or share their own knowledge and experience in the field.

### ***Challenges***

Individuals working on Design for Health-related projects listed many challenges that can be grouped into those associated with working within complex, rigid and hierarchical systems, challenges related to communication and collaboration, and challenges specific to doing design for health research.

Working within or across complex inflexible systems often involved challenges around limited resources, rules, regulations, and processes; those related to delivering evidence-based, quantifiable and implementable outcomes, and; challenges related to incompatible technological systems (such as information technology).

Working with professionals with diverse backgrounds often came with jargon and language barriers, differences in motivation or drivers, paradigms and methodologies, and competing agendas. Bringing design into health was often associated with a lack of understanding and having to justify the value of design to those within healthcare organizations who often had limited ideas of what design can contribute to health (‘you're not qualified’). Forging meaningful relationships and finding the right collaborators (in design or health), overcoming logistics and

boundaries to facilitate collaborations, building trust and rapport (e.g., ‘with risk averse clinicians’), aligning expectations, involving end users in Design for Health projects, and finding ‘champions’ within healthcare organizations were seen as challenges to having true transdisciplinary collaborations. In addition to these, participants working in academia reported difficulties with obtaining funding for Design for Health research projects from traditional health research funding agencies, as well as managing ethics reviews. Other challenges included gaining access to and recruitment of users of healthcare as participants in research, using research methodologies different to those traditionally used in clinical settings, conducting academic supervision within a healthcare environment (especially if coming from design), the politics involved in working across different schools within a university (e.g., art and design, and health sciences), publishing findings, especially if not favourable to the healthcare context in which the study took place, and difficulties in making connections with the right people to collaborate on research projects.

### ***Opportunities***

From their current experiences and challenges, participants identified the following opportunities that might come from a D4H network:

- **Creating a shared understanding** of each other’s perspectives, language, expertise, methods, methodology, and expectations. This included acknowledging that there may be ‘different ways of seeing’ among the disciplines of design and health, providing a ‘safe space’ for discussion and uncovering of what may be implicit biases and understandings.
- **Building collaboration** through inclusiveness, transdisciplinarity, diversity, sharing, connectedness, empowerment, and changing roles. Participants

agreed that both disciplines are guided by the common goal of ‘improving health and wellbeing of those most in need’ and that a varied and diverse network, involving not just those working in healthcare and design, but also communities, families, and patients would lead to better shared skills, values, and methods and breaking down of barriers and hierarchies that are currently hindering change. Sharing funding opportunities between each other, securing sustainable funding, setting meaningful 10-to-20-year aspirations and goals, having clinical champions to help navigate complex spaces (e.g., hospital), co-design, embracing cultural diversity, nurturing existing networks and fostering international collaborations were mentioned as some of the concrete examples of how to enact this change.

- **Breaking 'normal'** - doing things differently. This theme underlines the need expressed by the participants to radically shift perspectives to be able to see problems differently (‘leapfrog status quo, not just incremental changes’), change conversations and roles, even going as far as redefining what we mean by health. Lateral thinking and a creative approach were described as needed to spark innovation and ‘more excitement than fear’ around making a change. Participants believed this could be achieved through breaking down siloed approaches to delivering health services, developing new ways of working related to clinical practice, empowering decision makers to encourage new ways of working, using the arts to facilitate change, and making time and providing ‘a safe place allowing clinical partners to be creative’. Overall, participants saw an opportunity to use design to promote equity and health outcomes for everyone to break down barriers and have health practitioners' knowledge enhanced by design perspectives and knowledge.

- **Communicating the value**, gaining trust and buy-in. Participants saw the importance of having to demonstrate the value of design for health projects to secure management and stakeholder buy in. Some of the best ways to do so were thought to be through making projects feasible and tangible through storytelling, having ‘quick wins’ to gain trust in what design can offer to generate future ‘buy in’, providing a glossary at the start of each project, agreeing on and sharing of methods and technological tools, having ongoing transparency through regular catch ups and publishing for impact across disciplines.

### *Aspirations*

Table 2 summarizes the findings related to the attributes or qualities participants thought best embodied what the D4H network should be. The top three qualities participants believed the network should collectively aspire toward were for it to have a *clear purpose or intent*, be *influential* in catalysing change in healthcare via design both internally and across systems, and finally be *experimental* – in terms of challenging the status quo and pushing boundaries without the fear of failure. Being sustainable, transparent, responsible and considered were also selected by participants as other important qualities to aspire towards.

[Table 2 here]

Table 3 shows the characteristics participants believed best described what success should look like for a D4H network. Being engaging and relatable, diverse and inclusive, and empowering and supportive were the top characteristics considered important for the network to be successful. Participants also rated being implementable and sustainable, progressive and innovative, and helpful as characteristics important for success.

[Table 3 here]

## **Discussion**

This study builds on previous research on using a symposium as a vehicle for exploring the challenges and opportunities for Design for Health in the hospital context (Cunningham and Reay 2019), and unpacking D4H collaborations from a point of view of academic researchers with health and design backgrounds (Nakarada-Kordic et al. 2020). The current research reaffirms the findings from these previous studies regarding participants seeing design as having the potential to be a catalyst for change within healthcare systems that are risk averse and largely change resistant. Yet, the findings of this study demonstrate that design is still very much perceived as something needing to ‘infiltrate’, having to continuously prove its worth and become embedded in health contexts.

The D4H-related work still largely sits within and is driven by academia – with academics who reported having worked on numerous design for health projects originating both from design and from health. Despite this, our findings show that the D4H space is much more nuanced and cannot be reduced to simply design or health. Considering the contexts and backgrounds of participants in this study, and the breath of design for health projects reported, the boundaries of the D4H space are blurry and the possibilities seem limitless. It must be added that most participants attending the symposium are likely to have an interest in doing ‘something different’ and are open to collaborating with people outside their professional ‘silo’. As such, they are not likely to represent the majority of individuals currently practicing in either the design or health fields.

A unique contribution of this research is that it enabled a diverse range of participants to together not only unpack challenges, but also co-explore opportunities

and lay foundations for a future D4H Network. Rather than trying to delineate the boundaries of the Design for Health field, the focus here is on the aspirations shared by the diverse individuals for a D4H Network to embrace diversity, inclusiveness, connectivity, trans-disciplinarity and changing roles.

Listing out challenges and providing critique around working in complex contexts is often easier than identifying practical ways to move forward or improve the status quo. Despite the numerous challenges, workshop participants' responses were also characterized by optimism and enthusiasm for change, from both design and health areas. For example, forging meaningful and reciprocal collaborations was seen as both a current challenge and a future opportunity. Wanting to develop a common language and understanding – and going beyond just design and health practitioners to include wider community and laypersons as co-creators and end users of design for health solutions – was seen as one of the future opportunities for a D4H network. These findings are in tune with those of Nakarada-Kordic et al. (2020) who concluded that successful D4H collaborations are conditional on three core processes: 1. understanding psychosocial contexts and empathizing with the human experience of those using and those providing healthcare; 2. building connectivity - through authentic and genuine collaborations and sharing of values and vision across disciplinary boundaries, and; 3. building capability - through involving different kinds of expertise and ways of thinking, building health and design literacy, respect and trust, and recognizing individual contribution. The authors argue that these processes should be made visible through collaborative discussion at the initiation of each new collaborative project.

Participants in our study reported that the majority of the design for health projects occurred either in the hospital context or in the community. Despite this, the

challenges they listed were largely related to hospital settings and systems. Consequently, this may have limited the participants' conceptualizations of solutions and future opportunities to predominantly this context, thus making it difficult to generalize the findings to wider contexts such as industry or government organizations. However, although Design for Health as an emerging discipline is still largely constrained to operating in the context of healthcare organizations, the global D4H community who participated in this research envisioned a D4H network as being a part of a far broader ecosystem, operating within and across various industries and systems, and across various stakeholders and organizations (public and private, not-for-profit and commercial). This supports the previous argument that, for D4H collaborations to be successful, what is required is supporting, enabling, and empowering like-minded individuals, environments and contexts outside the hospital setting (Nakarada-Kordic et al. 2020). Groeneveld et al. (2018) argue that some of the challenges with doing design for health projects in healthcare organizations (such as difficulties related to accessing users of healthcare services through their healthcare providers) may be easier to overcome in other contexts where it is possible to have direct access to end users due to fewer ethical constraints.

For a discipline in its infancy, Design for Health is well positioned to move to the next phase of growth. Based on our findings and those from previous studies, we propose three broad opportunities for growing the discipline and building the D4H network. First, as professionals working in the D4H space, we need to start building an open collective resource to use when working together across disciplinary and geographical boundaries. This resource should operate as a way to make visible our projects to each other, as well as a 'site' from which to initiate new projects and partnerships. For example, this could be achieved through having a formal D4H

global network presence online that is accessible to a wide range of professionals, academics, organizations and communities, already working in (or interested in) this context. This would help make visible the values, vision, goals, and scope of the discipline to a wider audience. At a local level, having a shared D4H space could spark initiatives that would bring people with similar interests together. For example, forming project clusters around a problem. A bottom-up approach could work alongside the D4H community by having a shared space to come together, to support both design and health professionals to engage more deeply in their organizations to communicate the importance and value of D4H collaborations.

This research shows the breath of D4H projects already taking place globally. With the majority of projects reported by participants still taking place in the formal healthcare settings, there is a need to mobilize our collective knowledge of what already works and find ways to communicate the value and importance of collaborative, cross-disciplinary approaches to a wider range of organizations and communities and invite them to think differently. We already have a wealth of creative tools and resources that have proven successful in some settings – collectively we are well placed to work closely with a wider range of communities to build genuine partnerships, and work with them to tailor these resources to their context or setting to develop appropriate community-led solutions.

Lastly, those of us engaged in D4H should continue to do what we already know works well. The nature of the D4H discipline is experimental, creative and embraces prototyping as an approach to make ideas visual and accessible. By embracing this in the context of our own D4H discipline, our goal is not to propose a definitive solution (indeed, this thinking may simply constrain what is possible).

Instead we can embrace this ambiguity and continue to work on finding the solutions in this space together.

## **Conclusion**

This research is another step in the series of activities our group has initiated moving towards establishing a formal D4H Network. Building on the previous findings, we hope the findings of this research will help to establish a Design for Health Global Network to enable lasting, purposeful, engaging, empowering transdisciplinary collaborations and support in this space.

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## Figures

Figure 1. Example of mapping participants perceptions of where they were on their D4H journey.

Figure 2. Example of challenge mapping in one of the workshops.

Figure 3. Participants playing the card game designed to take them through a series of structured discussions to help them explore the qualities and characteristics of a D4H network.

Figure 4. Cards displaying attributes to sort and chose three from that best describe what a Design4H network should be.

## Biographies

Ivana Nakarada-Kordic is a design for health researcher at Good Health Design, Auckland University of Technology (AUT). Her current research focuses on the potential of human-centred design to support and enhance health and wellbeing, including developing and applying creative and empathetic human-centred approaches and methodologies for researching complex experience problems and facilitating the sharing of knowledge between designers and non-designers.

Stephen Reay is a professor, School of Art and Design and Director of Good Health Design at AUT – a design studio that has been initiated to more effectively explore how to bring together the fields of design and health and to help students better understand how they can engage with design processes in the area of health and wellbeing.

Claire Craig is Reader in Design and Creative Practice in Health and Co-Director of Lab4Living, a transdisciplinary research group at Sheffield Hallam University. Her research focuses on the role of design in promoting quality of life and wellbeing, particularly in the context of people experiencing major life transitions.

Guy Collier is an interdisciplinary researcher with a background in sociology, comparative religion, and medical anthropology. He is part of the Good Health Design team at AUT's School of Art and Design. His work focuses on the importance of understanding 'culture' in the context of design, particularly in the area of health and wellbeing.

Cassandra Khoo is a communication designer and researcher working at AUT's Good Health Design. Her background is in communication design, specifically in branding and information visualization. She has an interest in using co-design to improve communication in healthcare.

Helen Fisher is a researcher and designer working within Lab4Living, an interdisciplinary research cluster. Her research centres on working with people to develop products, services and interventions that improve quality of life and on developing creative research methods that enable conversations.

Nicola Kayes is Professor of Rehabilitation and Director, Centre for Person Centred Research at Auckland University of Technology (AUT). Her research draws insights from the intersection between health psychology and rehabilitation. Her recent research has focused on understanding aspects of person-centred practice, therapeutic relationship, behaviour change and engagement, and implementing related strategies into practice to improve outcomes that matter to people.







Figure 3



Figure 4

Table 1. Design for Health projects participants reported being aware of or involved in

What design for Health Projects are you aware of or involved in?
<b>User experience</b>
Improving the blood donation experience
User experience in health care services
Patient (Diabetes type II) perceptions of a wearable & diet/behaviour tracking app
<b>Product design</b>
Product testing research for organization that designs and manufactures scalpel blade removal systems
Designing holders for ultrasound probe holders (3D printed)
Industrial Design – Stroke ambulance – CT mobile
Industrial Design – Aircraft to design sleep
Device Design – health collaborations, breathing devices, wearables
Biomedical products
<b>Communication design</b>
Creating a guidebook for people with osteoarthritis
Simplifying health information so it's easier for users/patients to understand
Deaf community communication within hospital
Communication with people with disabilities
Epilepsy UX – reading ECGs and reports
System to monitor expiry date of medications in the store and manage stock
Diabetic monitoring
Hand hygiene

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Epilepsy management – app for patients & clinical sharing medication

reminders

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## **Ageing**

Good Innovation: sex and intimacy in dementia care homes

Living Lab for aged care

Aged care – dying in place

Aged care – design hub

Aged care – VR in hospitals

Loneliness project with older people

Video animation re: Alzheimer's and diabetes

Design for residential care

Cross cultural design for healthy ageing

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## **Children and young people**

Effects of porn on young people with the aim to create a digital help resource

Health and wellbeing access for university students

Youth mental health

Oral health by kids for kids

Healthy living for school children

Sexual Health – school/internet based

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## **Other**

Local wellbeing painting classes

Housing First: housing homeless people

Intensive in-home parenting support

Healthy food initiative

Film for safe water

How to support individuals who are using vapes to quit smoking tobacco

Inclusive Design (Design for all)

Virtual hospital

Donor retention with Red Cross

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Table 2. Attributes participants believed best embodied future aspirations for a D4H network ranked in the order of importance.

Ranking	Attributes	Summary of comments
1	Purposeful	Being intentional with clear purpose, collective focus and shared principles. Being clear on our ‘why’.
2	Influential	Using the collective lobbying or advocacy power, to push the design agenda, catalyse change and make meaningful impact. Influencing within and externally, across stakeholders, organizations, systems and policy.
3	Experimental	Being experimental in ethos and in practice. Challenge status quo and push boundaries of knowledge, ideas, practice, and methods. Having the courage to break roles, let things fail, challenge traditions and norms.
4	Sustainable	Building a sustainable, future-focused network, with longevity and diversity of impact considered from the outset, with cognisance of impact on people, planet, ethics, and humanity.
5	Transparent	Having a culture of trust, integrity and openness, where there is a safe space to share knowledge, ideas and opportunities, where we can make visible and invisible, learn from and build on each other’s work, prevent duplication, and avoid working at cross purposes.
6	Responsible	Being dependable, inclusive, organized, and meet collective needs.
7	Considerate	Being mindful (purposeful and deliberate) about what is being done, who it is done with and why.



Table 3. The characteristics participants believed best described what success should look like for a D4H network

Ranking	Success Factor	Summary of comments
1	Engaging	Fun, empowering, and relatable. Sustained engagement of a diversity of people and perspectives across contexts and regions. Drawing in new people and supporting capability and capacity building.
2	Diverse	Broad-based membership. Embracing diversity of skills, experience, perspectives, projects, thinking, cultures, outcomes, methods, and background.
3	Empowering	A supportive network, to ‘build up’ all, where people feel respected and listened to, where collective buy-in and impact is optimized. Pro-active, person-centred, sustainable and responsive.
4	Implementable	Sustainable, scalable, valuable, progressive, cost-effective, measurable, practical, bold (but realistic and achievable), and usable. Able to be implemented with existing resource, capability, and capacity.
5	Progressive	Innovative, creative and new ways of working. Future-focused with potential for long term benefit and application.
6	Helpful	Connecting people and information.