

INQUIRY INTO PERSONAL HEALTH PROMOTION INTERVENTIONS USING TELEPHONE AND WEB-BASED TECHNOLOGIES

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To: Health and Ambulance Services Committee

RE: Personal Health Promotion Interventions Using Telephone and Web-based Technologies.

We are members of School of Design in the Creative Industries Faculty at Queensland University of Technology. Based on our experience and expertise in research and design of health-related technologies in Australian and global contexts, we wish to bring forth the following matters to the Committee.

EFFECTIVE AND COST-EFFECTIVE TELEPHONE AND WEB-BASED TECHNOLOGIES TO INCREASE PHYSICAL ACTIVITY, IMPROVE NUTRITION, AND REDUCE WEIGHT:

The notion that mobile, digital, and networked technologies may provide a useful and persuasive platform for changing people's practices towards healthier lifestyle has led to an abundance in applications and services that aimed at achieving such goals. However, these endeavours have been met with a level of success generally discrepant to the hopeful expectation, in part because of the difficulty of addressing the complexity of values, forms, and concepts surrounding health and wellbeing. Emerging approaches that are contrary to the tradition corrective methods – for example, “celebratory health technologies” that focus on highlighting positive food interactions, meanings, and values – demonstrate that there is a clear need to understand the richness of the human experience in our designing of technologies in order to ensure that the technologies remain useable, useful, and effective.

Design as a field of research and as practice for technology and service innovation has a significant impact on our health-related practices and experiences. However, design is often integrated too late and simply as a communication tool. The technological outputs in this case are used to “translate” scientific knowledge. While this can be an effective means to disseminate information, it fails to motivate and sustain engagement of people or to bring about broader societal changes as intended. Therefore, in order to create impactful and cost-effective digital and networked technologies for health and wellbeing, we recommend taking holistic, transdisciplinary approaches that place design at its centre in order to:

1. Reconceptualise wellbeing as imagined, perceived, and experienced by individuals and communities.
As Burgess (2006) suggests, the question we must ask about digital media is not who speaks “but rather who is heard.” The proliferation of interest-based online communities demonstrates that there are deeper challenges in ensuring that people have access to quality information, and concurrently presents opportunities to explore new and meaningful ways to understand and evaluate health and wellbeing at the individual and community level. Recent years have seen major mobile manufacturers

competitively releasing assistive technologies focused on health, such as Apple Health app (<https://www.apple.com/au/ios/whats-new/health>) and Samsung S Health (<https://shealth.samsung.com>); smaller startups have become a prominent player in this field, as seen in Fitbit (<http://www.fitbit.com/au>). While they may provide a relatively accessible way for people to engage in more physical exercise and balanced diet, these technologies present an unsophisticated and perhaps distorted view on wellbeing by relying on simplistic tracking and analysis with a very limited set of metrics (for examples, number of steps taken, distance travelled, heart rate, and calories). Understanding people's diverse perceptions and practices of health and wellbeing, then ensuring those values are reflected in the design of assistive technologies will help us avoid taking such a "cookie-cutter" approach, and ensure that quality information is being "heard," leading to more sustained and meaningful engagement as needed and desired by people.

2. Expand and innovate research methods to gain rich insights into people's practices around health and wellbeing, with a particular focus on related uses of technologies. The so-called "quantified self" movement, which uses sensors and data analytics to track, record, and process information about self and surrounding environment) is one way of gaining insights into people's everyday practices related health. What is equally, if not more, important is to gain access to less explicit information that fundamentally shapes people's understanding, experiences, and aspirations around health and technologies. Achieving this is challenging and necessarily requires novel and experimental research methods that are complementary to the existing well-established research methods. The need for this kind of synergistic research approaches is supported by, existing health research such as the fifth report from the chief health officer of Queensland (http://www.health.qld.gov.au/cho_report). The report identifies that adult self-reporting of their weight is commonly incorrect, and that instead two out of three adults are measured overweight or obese. Perception of self is therefore a core design concern for any proposed solution. Combining conventional and new research methods enabled by digital and networked technologies will help build actionable knowledge, which can be directly applied to designing new and effective ways of health promotion, and importantly, engagement. Examples of such methods include Shared Visual Ethnography (Choi, 2010), which uses digital images and social media to tap into commonly non-verbalised information; social media analytics, which measures and interprets interactions related to particular topics on social media, and; cultural and design probes (Gaver, Dunne & Pacenti, 1999), a design-led approach that stressed empathy and engagement to understanding people.
3. Design and evaluate technologies in ways that are relevant for the Queensland's people, sociocultural contexts and public health challenges. Direct engagement of people in design processes will lead to technological outputs that will encourage people to be healthy in ways that are better aligned with their own sociocultural, technological, and

economic contexts. This helps to prevent design considerations being driven primarily by technical possibilities and basic customisation techniques. What is crucial for Queensland is to identify challenges and opportunities that are specific to the local contexts, and design creative technological responses that are meaningful to the people of Queensland. Various fields of design have recognised the significance of such an approach. Participatory Design is a clear example, as it is now widely used in human-computer interaction design (Bødker, 1996) as a means to genuinely engage potential users in ‘investigating, understanding, reflecting upon, establishing, developing’ in co-designing (Simonsen and Robertson, 2012). One local example of this approach in health is a recent project conducted by the Young and Well Cooperative Research Centre, which employed strength-based participatory design (PD) of technology-based health interventions for disenfranchised young Australians (Zelenko 2012). The project showed that directly engaging prospective users results in health education outcomes and empowers marginalised groups in the technology innovation process by facilitating a complex understanding of community’s or individual’s perceived strengths across both physical and mental wellbeing; and, through early testing, increasing the efficacy and relevance of the final outcome.

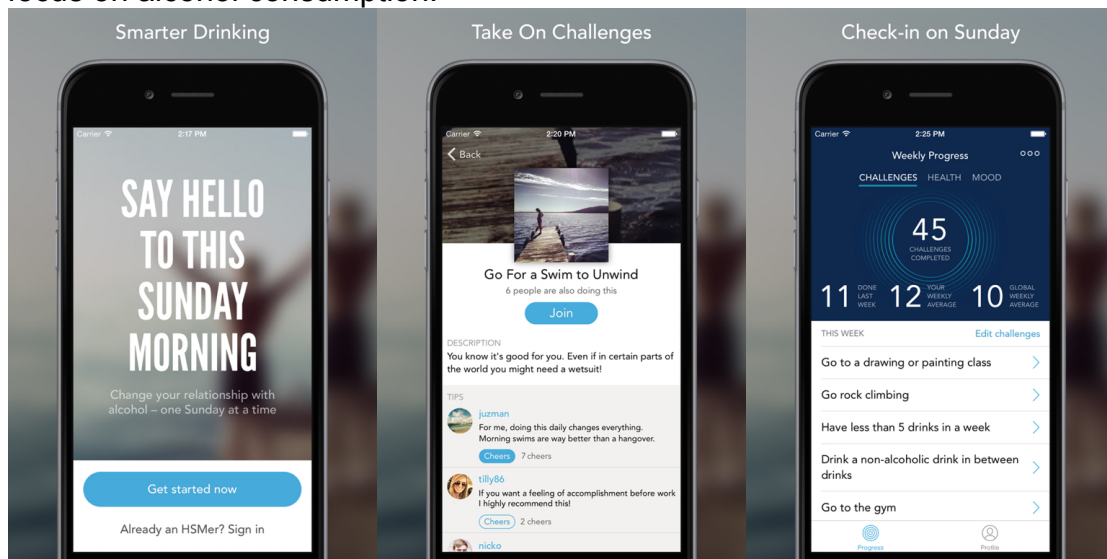
CURRENT PERSONAL HEALTH PROMOTION INTERVENTIONS IN QUEENSLAND:

We observe that there are numerous initiatives and Below three cases demonstrate a wide range of approaches that could take place to promote personal health in Queensland.

PEACH™ (Parenting, Eating and Activity for Child Health) program (<http://www.peachqld.com.au/>) is a parent-led training program for parents and carers who are challenged by maintaining healthy weight for their children. The program received AU\$5 million funding from Queensland Health under the National Partnership Agreement on Preventive Health - Healthy Children. PEACH was developed by dietitians and is delivered predominantly through facilitated workshops. It is targeted specifically at 5-11 years old children with above a healthy weight for their age and aims to reach 1400 families in Queensland. While evidence suggests that the interventions are effective, the main limitation of this program is its limited integration of available digital and networked technologies, which may provide easier access to the parents and new modes of engagement directly with children.

Hello Sunday Morning (<https://www.hellosundaymorning.org/>) takes the opposite approach to the PEACH program by directly engaging young people through the use of online platforms (website and mobile app) for early intervention and treatment that helps people change their relationship with alcohol. It encourages young people in particular to set feasible weekly challenges that share their “hang-over free” Sunday experiences with others. The program received an AU\$1.1 million from the Australian Government and

is set to reach 50,000 people. The limitation of this program is its exclusive focus on alcohol consumption.



Hello Sunday Morning App

Calculate your Health and Fitness Age

(<http://healthier.qld.gov.au/calculator/#/calculatorA>) is a Queensland Government initiative targeted at educating Queenslanders about their age as it is informed by their lifestyle choices such as diet and exercise. It has expanded presence on and the website. This provides an informative and relatively intuitive user experience. However, the interaction constructed as a Q&A session where one responds textually may not appeal to a wide range of people with varying literacy level and may appear confronting to people who are concerned about dietary or exercise issues.

BUPA Quick Health Age Check (<http://www.bupa.com.au/health-and-wellness/tools-and-apps/tools-and-calculators/quick-health-age-check>)

This online calculator from BUPA provides similar content to that of the Qld Government. However, this is more exploratory in structure: the user is able to change certain variables solicited such as improving diet or weight to see the corresponding weighted improvement in outcome in real time. One limitation is that unlike the preceding Government calculator, Bupa does not follow up with educational responses about choices subsequent to the interaction.

I'll just need a few details to get started.

My name is _____

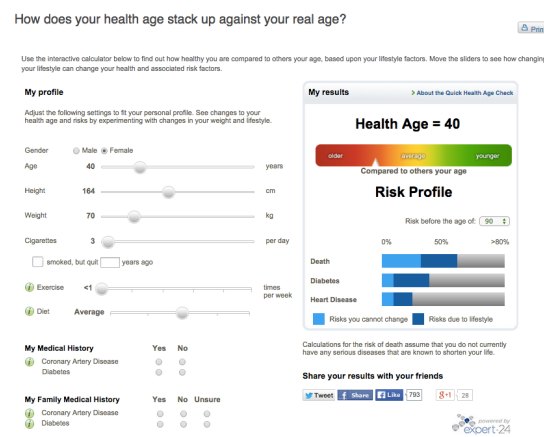
I'm _____ years old.

I'm Male Female

I weigh _____ kg.

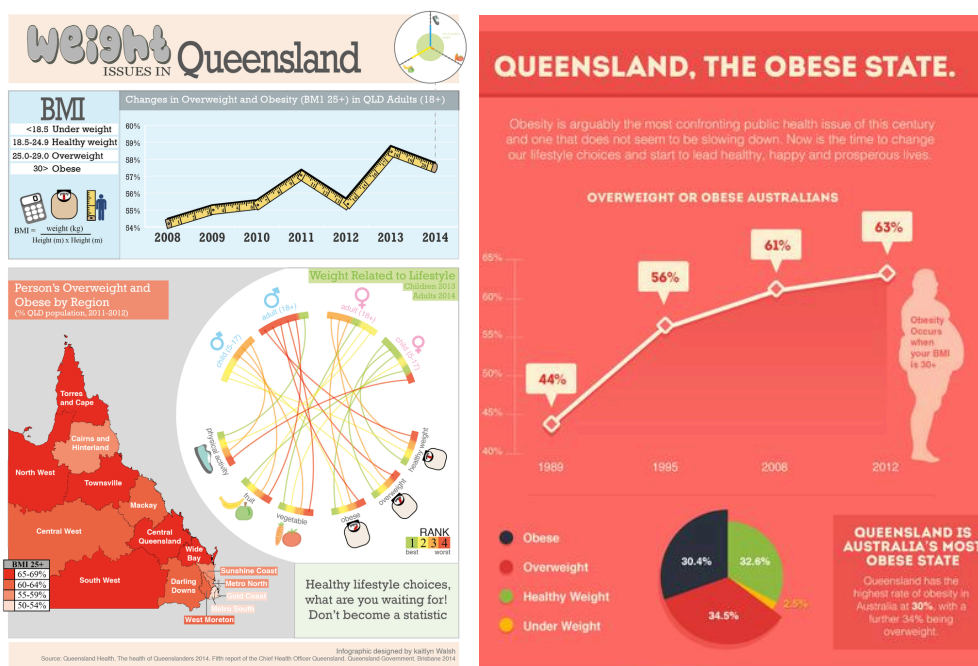
I'm _____ cm tall.

Done



Online Age and Fitness Calculators QLD (left) and Bupa (right)

#VisInfoDesignQUT is an on-going teaching and learning program that aims to raise awareness about health issues in Queensland among undergraduate students enrolled in Interactive Visual Design course at QUT, while generating practical and creative communication strategies. As part of their learning process, students draw on data and findings in the recently released 200 page online report from Queensland's chief health officer (http://www.health.qld.gov.au/cho_report) to create infographic design responses sends health messages to Queenslanders. The project developed through collaboration between lecturer Jen Seevinck and Queensland Government staff Helen Sharpley and Vivian Sawatzki (Department of Premiere and Cabinet) and, since its inception, has also benefited from the input of Senior Epidemiologist Margaret Bright (Queensland Health). The first student cohort produced over 60 designs.



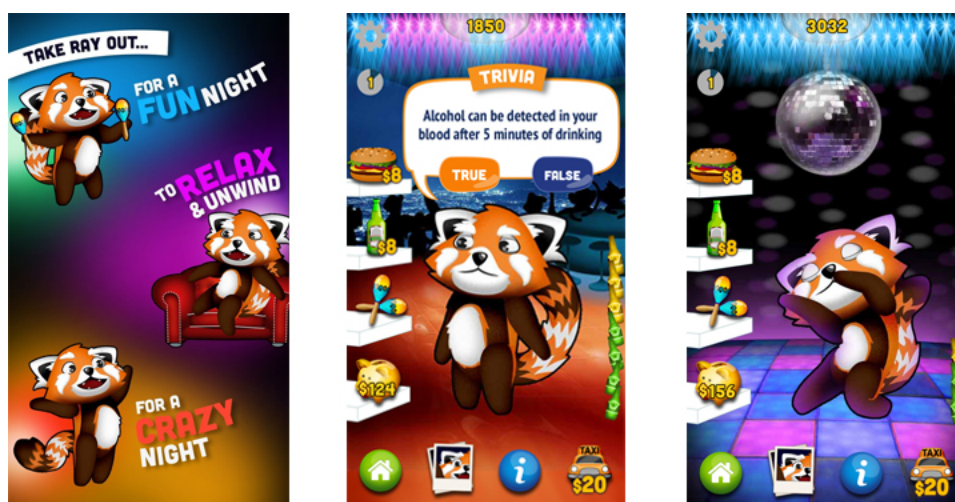
Examples of student work for #VisInfoDesignQUT

EXPERIENCE IN OTHER JURISDICTIONS IN DEVELOPING, IMPLEMENTING AND EVALUATING RELEVANT HEALTH PROMOTION INTERVENTIONS

Young and Well Cooperative Research Centre

(<http://www.youngandwellcrc.org.au>) is Australia's largest collaborative network comprising young people, government services, health researchers, design experts and social services. The nation-wide engagement strategy has had broader implications for the sector, with new and reformed models of health services are sought; those that more effectively and efficiently integrate personal mobile and institutional models of service delivery to promote community and individual health and wellbeing. *Ray's Night Out* is an innovative mobile health app produced by the centre. It targets young people aged 16-24 to make better choices while on a typical night out, including not

crossing the 'stupid line'. App features include animation, elements of gamification, high interactivity and user input to deliver randomised health messages and prompt personal reflection on lifestyle choices, including tools for tracking food and water intake, high energy physical activity and pacing, among other features. The app was co-designed with young people and developed by Young and Well CRC, at QUT School of Psychology and Counselling, Institute of Health and Biomedical Innovation, in collaboration with QUT School of Design. The app is in the final stages of evaluation with young people across Australia and due for release through iTunes this year.



Ray's Night Out

Eat, Cook, Grow: Ubiquitous Technology for Sustainable Food Culture in the City (<http://www.urbaninformatics.net/projects/food>) was a three-year research project funded through the Australian Research Council's Linkage funding scheme (AU\$ 320,553). QUT Urban Informatics Research Lab led the project to investigate ways to playfully engage people in growing, cooking, and eating food in healthier, more socially inclusive, and environmentally sustainable ways through uses of digital and social media in Australia, South Korea, UK, and the USA. Partners included Queensland-based organisations (Queensland Health, Food Connect Pty Ltd, Cityfood Growers Pty Ltd, James Street Cooking School, QUT) as well as international partners (University of Lincoln, UK; Hongik University, South Korea; University of Washington, USA). As one of the first research projects exploring the intersection of food, technology, and design in Australia and internationally, it led to the establishment of the ACM SIGCHI FoodCHI research network and symposium (<http://foodchi.urbaninformatics.net>) as well as the first book ever published on the topic by the MIT Press (<http://eprints.qut.edu.au/56591>).

POTENTIAL OPPORTUNITIES FOR COLLABORATION AND COOPERATION BETWEEN GOVERNMENT AGENCIES, RESEARCH INSTITUTIONS, COMMUNITY ORGANISATIONS AND THE BUSINESS SECTOR

We believe that trans-disciplinary and trans-sectorial collaborations are not only effective but necessary in order to generate sustainable and impactful

outcomes from implanting telephone or web-based personal health interventions. Our own experience of working in such collaborative contexts in a form of an ARC Linkage, CRC, and research consultancy, applying design and creative thinking complemented by people-centred and co-creative practices will help target problems and engender new opportunities that are specific to health and wellbeing of Queensland people in sustainable ways. We welcome an opportunity to further discuss how we could offer our expertise to create a healthy future for Queensland together.

AUTHORS

Dr Jaz Hee-Jeong Choi is the Deputy Director of the Urban Informatics Research Lab and a Senior Lecturer in the School of Design, Creative Industries Faculty at Queensland University of Technology, Australia. She is also the founder and acting chair of FoodCHI, a global food and computer-human interaction research network as part of ACM SIGCHI. Her research interests are in playful technology, particularly the ways in which various forms of playful interaction are designed, developed, and integrated in different cultural contexts. Her current research explores designing and developing playful technologies to cultivate sustainable food culture, as well as self-care and mutual aid in urban environments with a particular focus on youth social entrepreneurship. She has collaborated with leading international researchers, published in books and journals across various disciplines, and given invited talks at major international conferences including the opening keynote at the 2010 UNESCO Creative Cities Conference.

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Dr Jen Seevinck is an electronic artist, researcher and lecturer in Interactive and Visual Design. She has a Ph.D. in computing sciences from the Creativity and Cognition Studios at the University of Technology, Sydney and further education in the electronic arts (ANU) and architectural design studies (UQ). She has worked as an artist, freelance designer, researcher and educator since 1993. Her practical and research interests include interaction design and visualisation; specifically interactive and concrete art, emergence, tangible computing, virtual reality and medical simulation. She is most interested in new and surprising interaction behaviours that occur during people's interaction with systems. She has developed many interactive training applications, mostly using state-of-the-art interaction technologies and applied to medicine, space, data visualization and engineering. She has recently completed a community interactive art project with Cerebral Palsy League(CPL), exploring and visualising participants' movements through their drawings and co-designing.


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Dr. Oksana Zelenko is the Head of Discipline for Interactive and Visual Design. Oksana led the design research team and the commercialisation process in the development of the ARC-funded QUT Online Visual

Counselling Tools project, which resulted in a world-first e-counselling application to employ visual synchronous assisted and non-assisted counselling, currently in use by Australia's largest youth counselling organisation, KidsHelpline. Oksana has produced a report on the potential of digital media to support youth mental health for Queensland Health and QUT Resilient Children and Communities Project (2002-2006). Oksana's broader practice includes the design and evaluation of interactive educational programmes for cross-cultural training of medical staff in remote regions across the Pacific, development of interactive counselling modules for Queensland Government and ongoing design consultancy in the not-for-profit sector. Oksana has presented the outcomes of her research nationally and internationally.



Dr Jared Donovan is a lecturer in Interactive and Visual Design. His main research interest is in finding better ways for interacting with computer technologies. The goal of his research is to help make computer technologies easier to use, more enjoyable and more respecting of people's abilities for skilled physical movement. In particular, he investigated the use of gesture as a way for people to interact with computer interfaces without the need for computers and mice. For his PhD thesis, he looked at how this idea could be applied in a Dental Surgery setting where dentists and assistants need to follow infection control procedures but also have easy access to electronic patient records. He is currently investigating how such gestural approaches input could be combined with simple haptic feedback to improve people's overall experience of gestural interaction. He is also keenly interested in Participatory Design approaches and finding better ways of involving stakeholders in the design process.



Professor Marcus Foth is founder and director of the Urban Informatics Research Lab, and Professor in Interactive & Visual Design, School of Design, Creative Industries Faculty at Queensland University of Technology. Marcus's research focuses on the relationships between people, place and technology. His recent studies have applied design thinking approaches in order to evaluate and innovate behaviour change programs. This has included Australian Research Council funded studies into food and technology in collaboration with Queensland Health, community engagement programs with Brisbane City Council, blood donor loyalty for the Blood Service of the Australian Red Cross, and flexible work space arrangements for the Queensland Department of Science, IT, Innovation and the Arts (DSITIA). Marcus has received over \$4 million in national competitive grants and industry funding.



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