

# Knowing the Unknowable: Understanding and Measuring Design Impact across Disciplines and Scale<sup>1</sup>

## Presentation Abstract ASME IDETC – DTM Conference

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### Abstract

According to Simon (1988) [1], design is “devis[ing] courses of action aimed at changing existing situations into preferred ones.” In this context, “Good Design” is, on the one hand, subject to the eye of the beholder (the art or craft), and, on the other hand, an indisputable outcome (the science). In either case, “Good Design” comes about through inter-disciplinary Design Innovation, and comprises the integration of people, process, methods, and principles (Camburn, et al., 2017; Tushar, et al., 2020; Sng, et al., 2017) [2-9]. Products, services, systems, or a combination are the result of good design, creating a transformative design impact on community, society, and people’s lives. Design impact can take several forms. Some of these may be quantitative, such as an increase in economic value after a rebranding campaign, improved sustainability, or a greater employee satisfaction after re-designing a workspace. Other forms of impact may be qualitative, such as increased positive sentiments, judgements in ethical sensitivities, and sense of well-being. In the end, Good Design emerges from the designers’ well-articulated ethos, and creates a “Wow” through its impact.

Taking our understanding and application of Design Impact to the next level, we worked with Singapore and the DesignSingapore (Dsg) Council [10] to explore, define and test design impact evaluation strategies as part of Singapore’s most prestigious national design award program, the President’s Design Award (P\*DA; <https://www.designsingapore.org/presidents-design-award>) [11]. Through interviews with expert designers, a careful study of the design disciplines, and an understanding of design award programs across the world, the concept of a Design Impact framework was developed. This framework, as a unification of the concept of Design Impact across disciplines and scales, places emphasis on outcome-based design impact alongside recognition of excellence in design craftsmanship. Designers who bring together diverse skills and work collaboratively across disciplines to address complex issues are given significant recognition. This approach celebrates future-forward designs, designers and design processes that anticipate, envision and shape the world of tomorrow.

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As a tangible and extended idea of Design Impact, four Impact Areas were identified to constitute the framework, initially tested and utilized as part of the P\*DA (Fig. 1):

- A. Enabling Economic Transformation
- B. Raising Quality of Life
- C. Advancing Brand, Culture and Community at Any Scale
- D. Making Ground-breaking Achievements in Design

## Introduction to the Framework

Impact Areas, Outcomes and Demonstrators

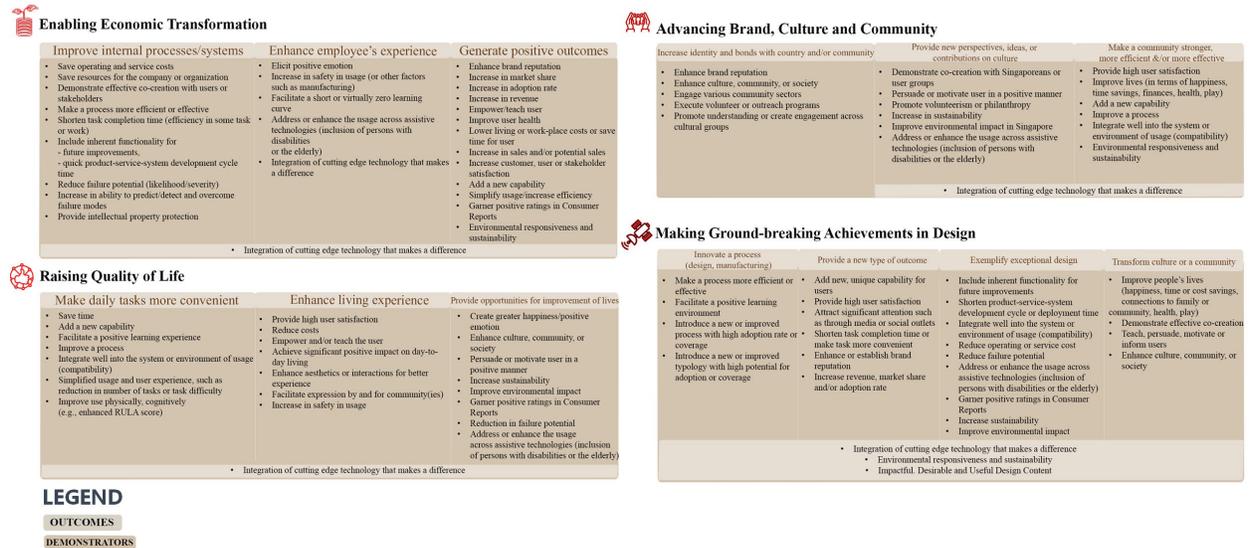


Figure 1. Design Impact Framework: Design Impact Areas (4), Outcomes (13), and Demonstrators-Metrics (57).

Outcomes and demonstrators were developed to help define and assess each impact area. Examples include enhancing employee experience, enhancing living experience, empowering and facilitating positive user learning, increasing revenue, simplifying usage and increasing efficiency & effectiveness, increasing identity and bonds with community, and innovating processes and functionality. People are at the center of this understanding of Design Impact, and it is supported by a repeatable process to assess design impact across industry and government sectors.

Using the Design Impact framework, we hypothesized that we may answer questions such as, “What could a hotel, a toolkit for non-profit organizations, and one of the largest 3D-printed structures have in common?” They are all examples of impactful designs, beautifully conceptualized and executed. The Design Impact framework considers different types of impact and shows that while certain types of “impact” can be quantified, we also now have other ways for measuring impact and widening its definition.

To test the developed Design Impact framework, a submission portal was developed, through the DesignSingapore Council’s website, for designers and organizations, across disciplines and across project scales, to submit their designs as part of the Singapore President’s Design Award. Over a three-year

period, and across two cycles of submissions for the P\*DA, hundreds of designs were submitted and juries of design experts shortlisted the submissions [12]. We then assessed the shortlisted designs using our developed Design Impact framework and assessment methodology, and reported Design Impact results back to the juries.

Through these engagements, data were collected on all design submissions; coverage of the impact areas, outcomes and demonstrators; the level of impact of the submitted designs; and survey results of the members of the national award juries. These data were then analyzed across multiple factors, resulting in a number of insights about Design Impact and conclusions concerning the Design Impact framework. Overall, these insights and conclusions include: the Design Impact framework was effective and comprehensive in representing, understanding and measuring design impact; the Design Impact framework provided a basis and common language for discussing designs across disciplines and scale; and there is value in representing Design Impact for not only assessing designs, but for proactively planning impact in future designs. We believe that being able to do so will enable companies and designers to forecast project outcomes and drive teams more effectively.

In this presentation, we motivate the need to investigate the area of Design Impact and develop a deeper understanding, representation, and method for measuring impact, across disciplines and scale. We then present our Design Impact framework and assessment methodology, along with our research methodology, data collection approach, results, analyses, and conclusions. Figure 2 provides exemplar research findings.

Today design is at our fingertips, for all of us, for our organizations, and for our communities. We all can invest in learning and extending our skill sets in designerly ways. We can apply design and gaze through the lens of what constitutes good design and even design excellence, as we strive to make our lives and our world better. And ultimately we can know and embrace the unknowable – Design Impact, applying it in all facets of our government, business and private lives. This is our challenge as a world community; let's proceed forth and realize it every moment of every day. In the words of Dr Jeffrey Chan (2018),

“Today, design is increasingly harnessed in the creation of new environments within already existing artificial environments and systems. In doing this, humanity has evolved from being merely a biological actor to a geological agent – one that is equipped with an agency for creating successive layers of new design, which are rapidly accreting on prior layers of already existing artificial systems. Consequentially in the Anthropocene, the focus has also shifted from the protection of the environment to the production of environments. And it is [through] the power of design that the Anthropocene can be properly understood.”

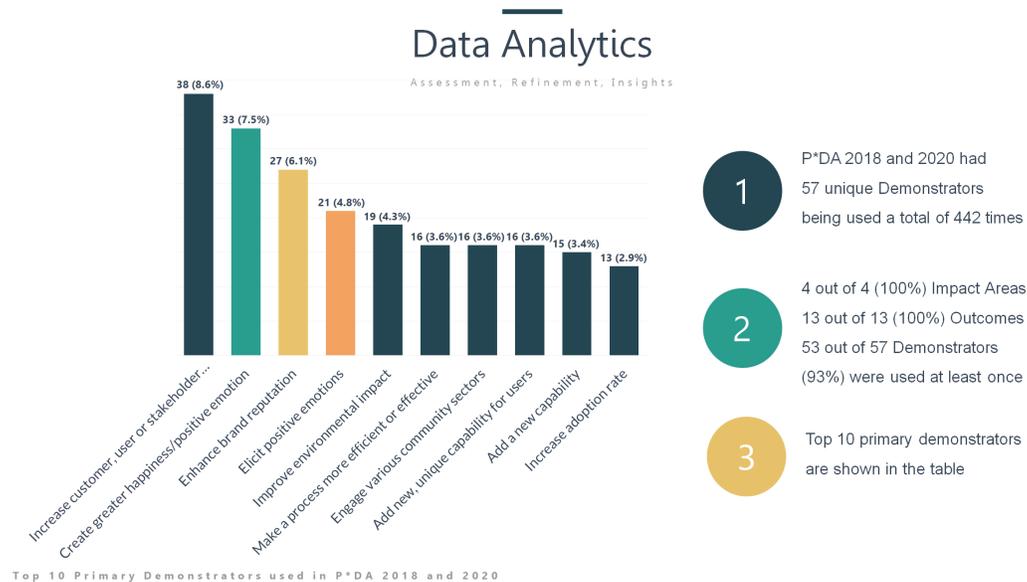


Figure 2. Exemplar research findings: *Design Impact Framework*.

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