Mapping design capability of public service organisations: A tool for collaborative reflection

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Abstract

While public service organisations nowadays strive to shift their mind-sets to be human-centred, collaborative and build in-house design capabilities, design as a growing strategic tool is not clearly understood among public officers. What exactly is design, what are its contributions and how to relate design practices to their everyday work are barriers to successfully embed design within their organisations. There are also limited facilitation tools to achieve a mutual understanding between designers and public officers during collaborative projects. This research introduces the development of a design capability mapping tool, with the aim of capturing and amplifying clarity around a public service organisation's propensity and aptitude to embed design at various levels throughout the organisation. The tool has been tested with several government agencies in Singapore to help them identify their perceptions of design, resources and mind-sets to utilise design as a strategic tool, as well as misalignments in their understandings.

KEYWORDS: design capability, public sector, transformation, mapping

Growing design capability in the public sector

Many successful service implementations are in the understanding of the adaptability of public officers (Keller, 2013). The sources of innovation are not solely from designers and users but also employees and stakeholders of the organisations. New ideas are being regularly generated through user interactions and employees' tacit knowledge, not just from explicit research and developmental activities (Miles, 2001). When discussing an organisation's propensity to absorb design methods and human-centred approaches, Miles (2001) describes it as *design capability*, an organisation's ability and aptitude to absorb these learnings. Design capability reflects the level in which design is operating within an organisation, as formal creative methods for identifying problems, developing concepts and implementing new or enhanced services and products (Floss, 2015). According to Branson (2015), a well-defined design capability in organisation is structurally an optimised work system, from ad-hoc

projects and practices, to formally defined guidelines, to measurable metrics, to ensure sustainability and success.

Yee and White (2016) stated that changes to organisational practice cannot occur without building capability and flexibility across any organisation. To sustain transformative changes, Halvorsen et al. (2004) drew attention to the importance of creating both reflective and learning opportunities for design methods to be effectively disseminated and exploited throughout any organisation. As Bason (2010) argues, for design-led innovation to be integral of the corporate hierarchy, there needs to be constant inquiries into the status of in-house design capability and constant conversations with other corporate functions like Information Technology, Engineering, Marketing and so on to create alignments. Organisation transformation by design can be a product of collective and individual learning through reflections (Goh and Richards, 1997). Reflective learnings thus focus the organisation on required interventions. Reflection tools play an important role as shared platforms and as contextual representations for understanding organisational challenges and social problems (DiSalvo, 2010; Bjogvinsson, Ehn and Hillgren, 2012).

It is insufficient to introduce design methods and tools without equipping people with a common vocabulary to communicate processes and outcomes. A common design vocabulary is required if officers are going to be able to share collectively what, why and how they are applying design (Bailey, 2012). In this paper, we introduce the development of a practical tool that helps the public service organisations map their design capabilities. The tool maps the organisation's current perceptions of design, its design practices, current skill-sets and organisational support through collective participations of public officers. By doing so, it aims to facilitate their shared understanding about design and visions of their organisation. Taking cues from Junginger's study of organisational transformation, the tool aims to serve as a conversational piece, a designed platform to engage organisations into conversations about their own design legacies and their future design visions (Junginger, 2015). This paper presents a conceptual framework of the tool and preliminary findings from on-going tests with several public service organisations in Singapore.

Towards a design capability mapping tool

Review of related works

There have been several attempts to diagnose organisations' design perceptions and the level of their design capabilities, from both industry and academia. Prahalad and Hamel (1990) explained that all organisations gain knowledge as they solve problems and establish new cultures. Over time these collective learning became core competencies and set as shared knowledge foundation. A legacy within organisations is seen as routines and processes of problem solving that are conveyed from person to person (Junginger, 2013). One way to understand design legacies is to inquire into organisational design practices. We reviewed a few tools to identify opportunities and limitations. These tools were developed to measure impacts of design in organisations and to measure design capability in organisations. Considerations are the tools' approach to actionable evaluation and its support of evidence-based analysis by creating links between respondents, organisations and data.

Artefact Group's Design Maturity Survey

Design Maturity Survey was developed by the Artefact group to evaluate organisation's level of design maturity (Artefact group, 2015). It is an online system that provides respondents with individual insights to help them prioritise their organisation's investments plus contexts to evaluate business performances. There are five categories in which respondents rate their

organisation based upon best practice example statements. The categories are Empathy, Mastery, Character, Performance and Impact (Figure 1). It provides an overall maturity score given based on the average of the five category scores, as well as scores across each of the categories.

Design Maturity Survey is relevant and a good foundation for organisation to start thinking about how design approach is being applied. Although it provides general insights, it does not provide in-depth analysis or any industry benchmark to help management understand how to improve design initiatives. The survey has a fixed survey template where respondents will not be able to customise according to the current conditions of their organisations.
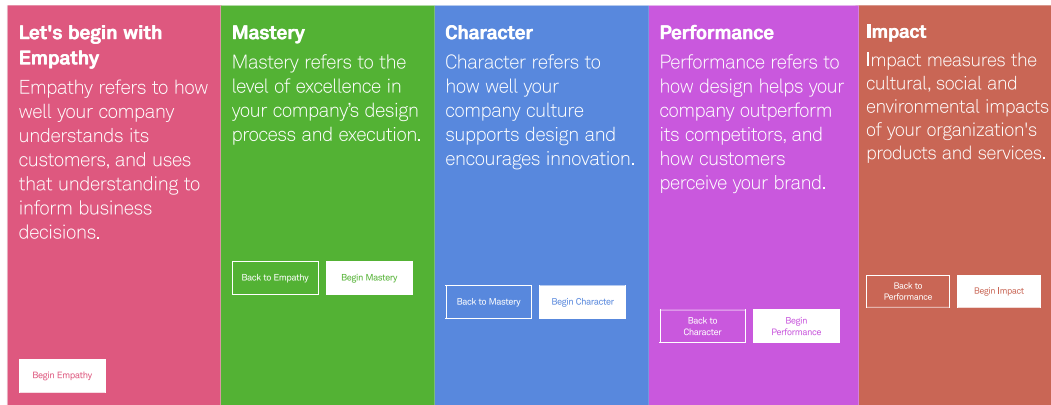

Figure 1. Design Maturity Survey's five categories for measuring design maturity (Artefact group, 2015).

The Moment's Innovation Checkup

The Moment's Innovation Checkup is an online diagnostic tool designed in 2014 to understand an organisation's readiness to innovate. The Innovation Checkup consists of 15 questions on Culture, Infrastructure and Activity (Figure 2). It evaluates the organisation's current innovation status while highlighting strengths for leverage and opportunities for improvement. Upon completing the tool, an email with a visual representation of the results, a description of contexts and some possible next steps, provide a baseline indication of innovation efforts (The Moment, 2014).

Utilising high marks to suggest innovation success or low marks to imply gaps, the Innovation Checkup does not highlight the respondent's understanding and involvements in the organisation's services, strategies or visions. While it provides generative insights, it does not share any mode of design interventions or deeper insights to how the organisation functions relative to cultivating, implementing and improving innovation. The survey also has a fixed survey template where respondents will not be able to customise according to the current conditions of their organisations.

Figure 2. The Innovation Checkup structure is based on three areas that are deemed necessary for organisational innovation readiness (The Moment, 2014).

A conversational tool of inquiry of Service Dominant Logic

Although its focus is on manufacturing business than the public sector, the tool of inquiry of Service Dominant Logic was developed to help organisations realise their status in the transition journey from Good Dominant Logic to Service Dominant Logic (Sangiorgi et al. 2016). The underlying principle of this tool is that design can help organisations adopt Service Dominant Logic, with its quality of customer-centeredness and collaboration that can lead to value co-creation (Lusch, Vargo and O'Brien, 2007). There are four themes, namely Service, Design, Users and Vision, that formed the tool's framework to inquire about organisation's perception of current practices and future visions (Figure 3). Each category has specific questions to help respondents realise their understanding of how the four key themes are being manifested and operationalised in their organisations.

One of the benefits of this tool is that it can reveal misalignment in different employees' understandings related to the four themes (Sangiorgi et al. 2016). In terms of the inquiry on design capabilities, this tool focuses on Service Design Logic where design is part of the whole, so it has limitation for in-depth, detailed inquiry for understanding design. As the tool is only designed as a probe, action planning based on the tool's results must be done through workshop-type of activities with employees of different departments.
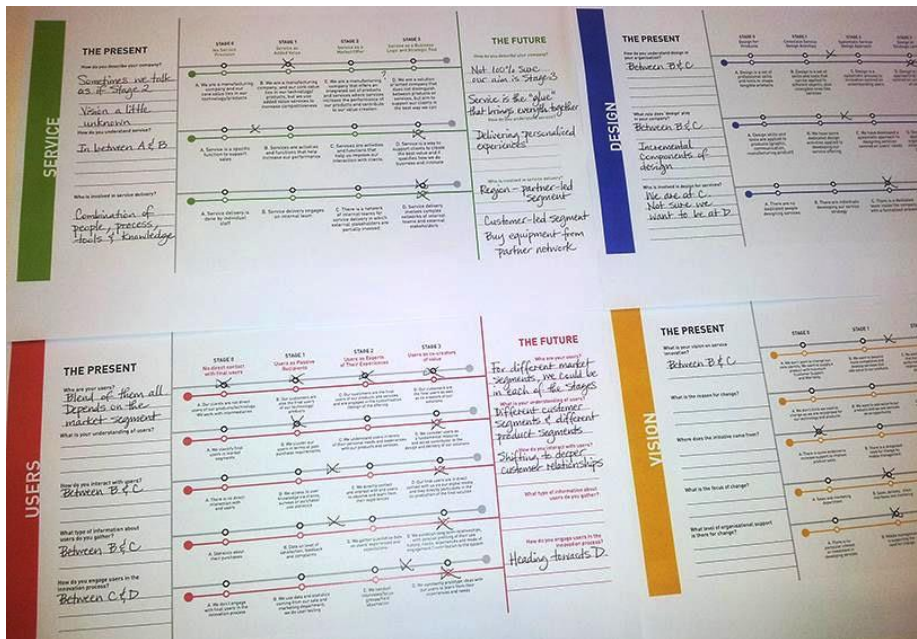
Figure 3. The conversational inquiry tool of Service Dominant Logic (Sangiorgi et al. 2016).

Developing a mapping framework

The mapping tool can be both a diagnostic and communication technique, with a set of basic scalable criteria for after-examination from individual self-assessment to collaborative team discussions. According to Goh and Richards (1997), learning and reflection in an organisation can occur at three interrelated levels of individuals, teams and systems. Evaluation of design capability then needs to be actionable, relational and accountable. Three requirements for the development of the mapping tool were generated: firstly, it should be diagnostic of the current status yet suggests what can be available as future directions; secondly, it should enable individual diagnosis and reflection, internal and cross-team sharing and mapping against the organisational vision; lastly, it should allow for both quantitative measurement and qualitative discussion as a conversational tool.

The result is a tool design of a series of 20 questions framed within two axes of approaches to understand design-related initiatives, awareness of design methods, practice of design tools and resource support in the organisation. One axis reflects the types of activities within the design process and the second axis reveals depth of capability levels (see Figure 4). For the types of activities within the design process, the questions aim to inquire about five themes of activities, namely Discover, Define, Develop and Deliver, based on the Double Diamond Design process model (Design Council, 2006). The fifth theme is Organisation Vision and Culture to understand how an organisation harnesses innovation and supports design infrastructure. The Double Diamond Design process model is one of the popularly used service design process models where The Lab of the Singapore's Prime Minister Public Service Division, DesignSingapore Council and its partners had shared with public officers through design thinking workshops and seminars (Challenge Online, 2011).
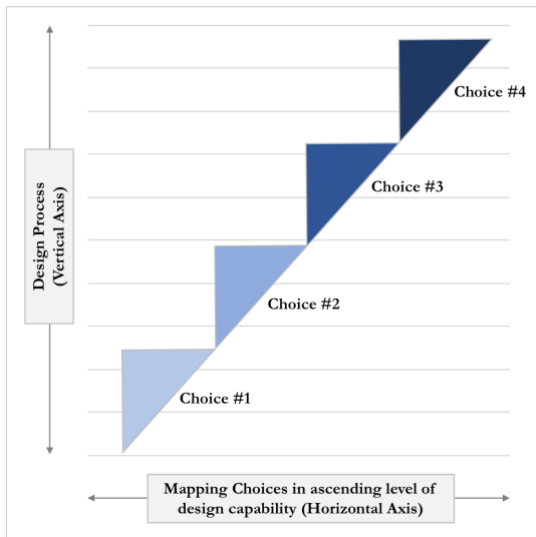
Figure 4. The mapping tool's two axes of approaches: design process (vertical axis) and mapping choices (horizontal axis).

The second axis reflects mapping choices arranged in ascending level of design capability referenced against the Danish Design Centre's Design Ladder and the UK Design Council's Public-Sector Design Ladder (Figure 5). The Danish Design Centre's Design Ladder developed in 2003 as a framework for two surveys conducted in 2003 and 2007 to assess the economic benefits of design, to show how design enhanced creativity, innovation and competitiveness of Danish companies. The higher a company ranked, the greater strategic importance they attributed to design (Sharing Experience Europe, 2009). The UK Design Council's Public-Sector Design Ladder is a roadmap developed to highlight progress towards design-led policy, to highlight public service organisations' status in applying design and directions in which to grow design capability. The higher ranked in the ladder, the more value design created but also highlighted barriers to use design (Design Council, 2013).

Figure 5. Left figure shows the Danish Design Centre's Design Ladder and right figure shows the UK Design Council's Public-Sector Design Ladder (Sharing Experience Europe, 2009 and Design Council, 2013).

As an example, Table 1 presents the formulated Discover phase set of questions representing activities within the design process (vertical axis) and mapping choices (horizontal axis) representing characteristics and degrees of design capability.

Discover Phase

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The process of understanding users, challenges, environmental and social situations.		
Who are your users?	•	They are internal cross-functional teams and senior management.
	•	We work with intermediaries (external service providers and other public agencies).
	•	They are indirect users of our services and products.
	•	They are end users whom we administer our services and co-creators of our solutions.
What role do users play in projects?	•	They are data representations of different demographic segments.
	•	They provide feedbacks on service satisfaction level and complaints.
	•	They provide critical voices for testing services and products.
	•	They are informants of their life experiences and active contributors to the design and delivery of our solutions.
What is you or your team's approach when gathering information about users?	•	We rely on desktop research and historical data.
	•	We rely on external consultants to gather data through surveys.
	•	We rely on frontline department to provide past service usage statistics.
	•	We interact with end users through field observations, focus group interviews, co-creation workshops and prototyping tests.
What are the challenges that you or your team face during service delivery?	•	We have difficulties in kick-starting ethnographic research.
	•	We have difficulties in identifying challenges and synthesising data that was collected.
	•	We have difficulties in the management of users, internal and external stakeholders.
	•	We have insufficient resources (time, funds, manpower support et. al.).

Table 1. An extract of a set of questions and mapping choices for the Discover phase.

Development of the mapping tool and tests

Tool design

The mapping tool was designed to be used in various settings. The physical format as shown in Figure 6 is ideal for workshop environment where smaller participating teams complete the questionnaire at the workshop itself and discuss about their responses upon completion. The digital format as shown in Figure 7 can be deployed for medium to large scale sharing, where the questionnaire is to be completed by respondents prior, follow with a sharing session at a separate workshop.

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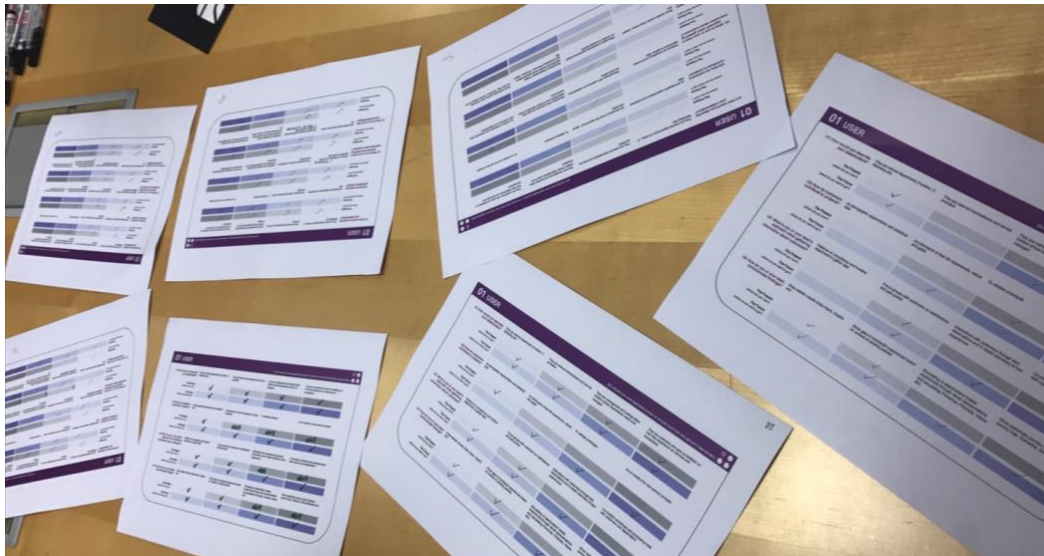Linköping University Electronic Press
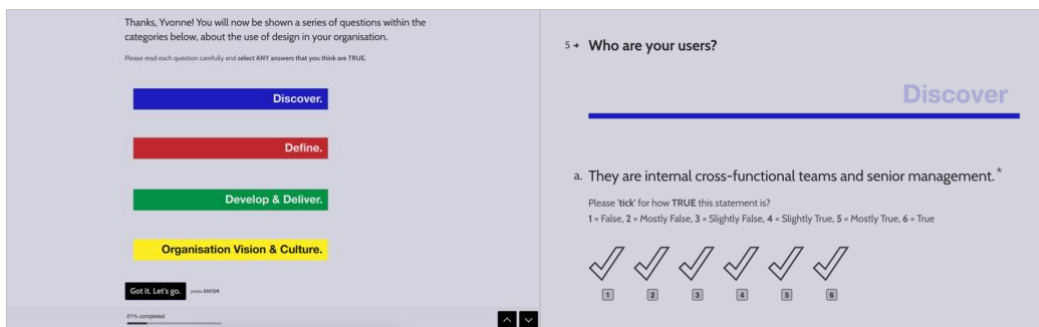
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Figure 6. Physical format of the mapping tool.

Figure 7. Screenshots of the digital mapping tool.

For each question, respondents are to choose what best represents their understanding of design, their work practices, their current organisational dynamics and rate in the form of a Likert scale (see Figure 7). The mapping tool also prompts respondents to envision future goals. To contextualise the application of the tool, the researchers worked with the organising committees to incorporate organisational typographies and terminologies. Relevant projects were crafted as scenarios for respondents to delve into daily work challenges. This is to ensure that the mapping tool is relational while treating the experience as self-discovery. The process is exploratory and aims to uncover value relations among diverse audiences and projects (Kimbell, 2010).

The mapping tool generates both quantitative and qualitative data. The questionnaire results provide an overview of the respondents' perceived design capability and their organisations' propensity to embed design. Group discussions turn these quantitative data into meaningful diagnostic insights through evidential dialogues. The collated data were analysed to source for patterns, differences and interesting themes to highlight current conditions and possible future steps.

Visualisations of mapping results

Upon questionnaire completion, respondents receive a series of maps that visualise their capability level in each category. Figure 8 is a representation of an individual mapping results and Figure 9 is a representation of a team's combined mapping results. A team's work

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typology is generated to describe areas of strength and gaps for improvements with data from both questionnaires and group discussions (Figure 10 and Figure 11).
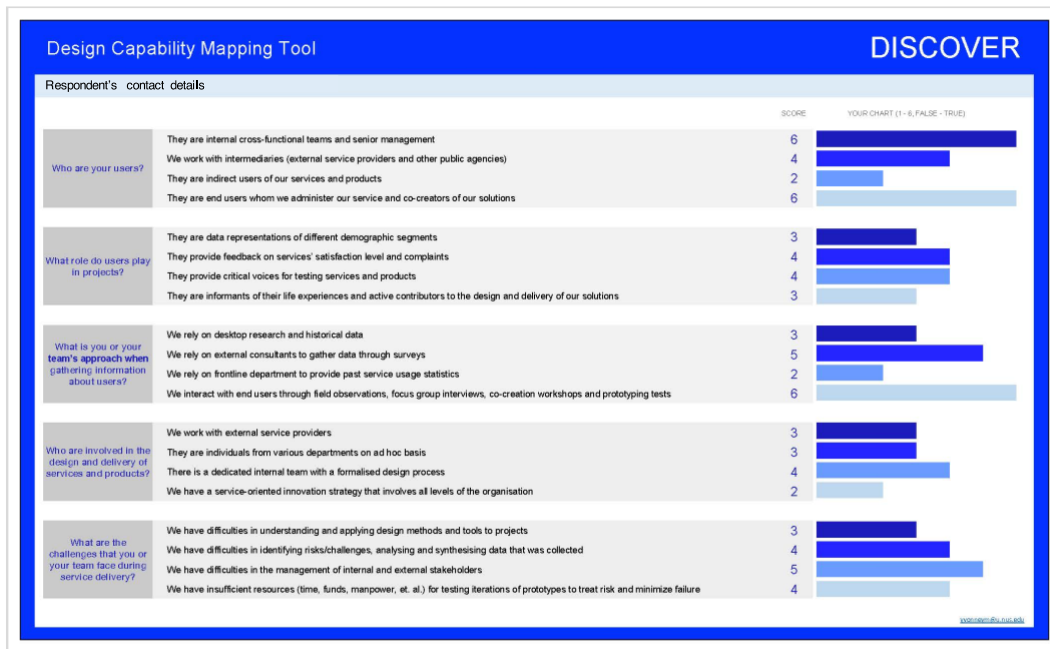

Figure 8. An extract of an individual map of the Discover phase: The left column contains questions; the middle column shows the responding choices and the bars on the right highlight grading of choices from the most applicable (Grade 6) to the least applicable (Grade 1).
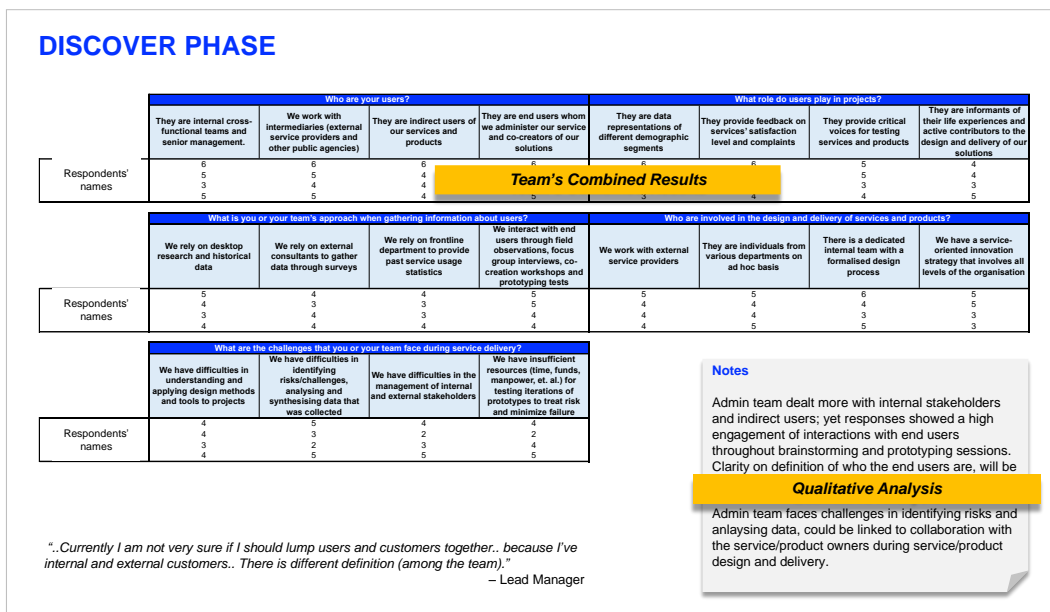
Figure 9. An extract of a team map of the Discover phase: The team map shows a combination of selected choices along with their respective questions. A related quotation from an officer was highlighted to explain the analysis of the team's perception and aptitude within the Discover phase.

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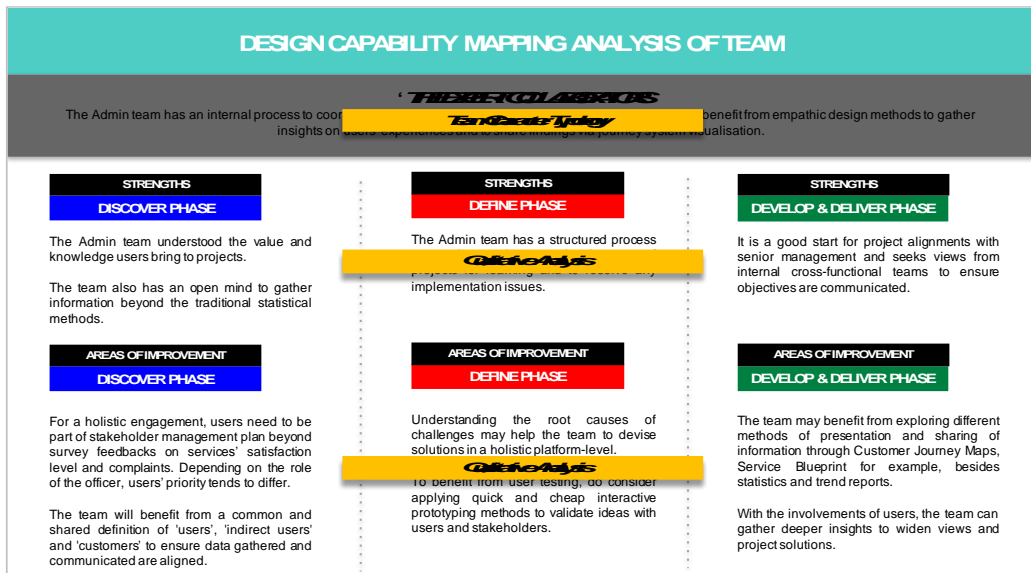
Figure 10. An extract of a team's combined analysis (quantitative and qualitative) of Discover, Define, Develop and Deliver phases.

Figure 11. A highlight of related quotations and possible future steps to embed design in organisation.

Case: The Taxation Agency

Mapping procedure

We tested the mapping tool with several Singapore public agencies of diverse policies, industries and community engagements. In this paper, we focus on one case where the

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mapping tool was introduced to the taxation agency in Singapore in 2017. The taxation agency aims to develop a nimble organisation that transforms tax experiences of the community and work experiences of its employees by leveraging on analytics, design and digitalisation. They want to help employees strengthen their capability in design thinking, deepen their operational skills and develop their adaptability to better respond to challenging work situations.

A pre-mapping meeting was held with the organising team to understand about their current design adoption status and design strategy. Upon prepping, a workshop was conducted with five members from the Policy Planning Department (PPD) and two members from the Organisation Development Division (ODD). The participants ranged from managerial to senior management level. They are design champions in the agency and well versed in design thinking process. In this experiment, participants used the physical format of the mapping tool in a workshop setting, including a discussion session using their answers. The objectives of the workshop were to achieve a shared understanding amongst team members about design roles in the agency to ascertain current status and future directions to achieve a design-driven agency.

The participants were informed that there is no right, or wrong answer and to answer exactly how they perceived and experienced design in their everyday work. Participants had immediate opportunities to clear up any challenges while using the mapping tool, this created an open environment for candid sharing of concerns and issues. A follow-up interview was conducted three weeks after the workshop, where analysed results were dissected with the organising team.

Figure 12. A design capability mapping workshop at the taxation agency.

Analysis

Questionnaire results, discussion transcriptions and interview transcriptions were collected from this case study. Based on these data, open coding was done to identify generative themes and categories. Followed by selective coding to explore associations of patterns and relationships for interpretations of findings. Four key areas were prominent after analysis:

- Individual and group's perceived values of design.
- Practical challenges in adopting design.
- Individual and group's realisations of misalignments.

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- Individual and group's shared understanding for future planning.

In the following section, we introduce our early findings of design capability mapping with the taxation agency.

Findings

Overall reactions on the mapping tool

All respondents gave positive comments on the usefulness of the mapping tool as it provides a chance to clarify individual and team's perception of the role of design.

"What I feel very meaningful and some of the learnings that I have today, firstly is coming up with the roles, so now we can explain to people what design to the agency is…Secondly is to validate, we sort of come together to validate what we think of design and also see what the gaps are." (Manager, PPD).

It was observed that the mapping choices were able to highlight design methods and philosophy beyond the popularised design thinking process.

"I am more excited with all the new materials. At first I know that design is those few steps but got principles…It's just so interesting to know that it has so much more to design rather than the simpler version." (Manager, ODD).

Unfamiliarity of design principles and terminologies were daunting for some participants while answering the mapping tool. They suggested that adding a glossary list of design terms would be useful. We found that setting the context of mapping upfront and having an open environment to share mapping results immediately, helped with managing expectations of participants, especially on the take-aways from the workshop.

Realisations and discussions

The taxation agency had embarked on a few design-led projects with external design consultants and sent many of their officers to design thinking workshops. The mapping tool highlighted some recurring issues they were facing. These originated from personal biases to group dynamics to politics internally and externally.

The perceived values of design

When probed on the team's approach in gathering information about users, some participants saw design as an enabler for empathetic discovery beyond current quantitative practices at work.

"Design is a tool where it allows us to find out what we don't know, as opposed to other tools." (Director, ODD).

"I think design brings out the emotions a lot, the empathy part. We do like hard data and analysis, we don't really look at their feelings...They're digits after all." (Manager, ODD).

It revealed that not all design tools were convincing with apparent reservations employing user research, when questioned about how the team applied design tools at work.

"Ethnographic research validated what we already know, supported what we want to push for anyway." (Manager, PPD).

A status quo of managing data and inability to challenge assumptions played a part in deciding solutions as well.

"We choose those verbatims that support what we want to push anyway and so then there are no earth breaking insights. I have not seen that big value from design that would worth that investments so far."

She further elaborated how high emphasis placed on results caused apprehensions in adopting design.

"At the end of the day, we are also quite evidence based and I've seen the impact of analytics and digitalisation. I think we are like for analytics and digitalisation we are at level 2 moving to level 3. But for design we're moving from 0, 1 to 2." (Director, PDD).

Though design had been highlighted as a transformation objective repeatedly during discussions, what design meant to the agency and how to achieve success had yet to be clarified.

Practical challenges in adopting design

Mandate from senior management was to embrace design but diverse work functions conflicted with mind-set and practicality in applying design. Being the domain knowledge experts, working with design expertise and internal stakeholders proved challenging.

"I think the challenge we face is they are the experts…My consultant tells me one thing and I feel a different thing and then I don't know what to do so sometimes it's harder for me… there's where my common-sense vs what the expert wants to teach me there's a conflict then I struggle." (Director, PDD).

When queried on how the team generate and validate ideas, they shared that they were unable to relate design to everyday work.

"Based on conversations with some of my colleagues, it seems like the major challenge is not about understanding the principles or what design is, is how to relate it back to our work. It's a question I don't have an answer to as well." (Manager, PPD).

In addition, work system constraints created an agency of silo-minded officers who were trained to follow the system for prompt delivery of results.

"I see the current challenge to be they are unable to look across silo because the structure doesn't help them to do so, maybe their mind-set is such that they are pretty inward…They are more brought up or trained to focus on efficiency and process, productivity in that sense."

She also shared that the value placed on good results, dialled-up discomfort in being judged for low performance.

"The mind-set from young to adulthood in the working world, fail is not even a word you should bring along in your vocabulary, so that makes mind-set even more challenging if we would to change them… people just not warm up to that." (Director, ODD).

The legacies of entrenched work processes constrained the officers in applying new tools, their concerns of ambiguity in alternative solutions tend to lead them to favour predictable options instead.

Misalignment in terminologies

Two main misalignments kept resurfacing, firstly the alignment of terminologies. The participants struggled to find a common description of their users, they were unsure to address them as users or customers even at the director level. *"Taxpayers and staffs. The other party basically."* (Director, ODD).

Participants in the same department showed similar confliction in terminology usage. *"Customers are generic, we rarely use that term, we just say users."* (Manager, PDD). *"Bosses also don't like users…We discussed over the use of words when we do our strategy. Sometimes we say customer centric, sometimes we say taxpayer centric, sometimes we say user centric. So, the bosses asked exactly what you want to use, we haven't decided what is the word to use."* (Director, PDD).

Misalignment in end-goals

The second misalignment is the direction of end-goals, and how to get to that desired state for a sustainable transformation.

"From the capability mapping, we can tell that all of us have different ideas of where we think we want the agency to be in the next five or ten years, how design plays a role. I think that is something we will need to figure out, so that's quite interesting." (Director, PPD).

"I agree that we kind of need to align, we need to come together to discuss to align our expectations where we want to be in the end. I do feel that we have a very different idea where our current state is and what the future state is." (Manager, PPD).

As Sangiorgi et al. (2016) pointed out, misalignment may not necessary be an issue, as officers with different job functions will naturally have different perceptions of design and experiences. What can be problematic is not knowing the existence of these misalignments when building an innovation strategy as everybody will be on different page.

Currently the agency is setting their design strategy and possibly an internal innovation unit with designers as part of this new effort. It is clear from the varied discussions that sustainability in embedding design and evidential communications on the value of design are much needed.

"I think in terms of organisational support; the sustainability part is not fully really there yet. I think a lot of us are still questioning the value and we haven't seen the impact on the business yet." (Director, PPD).

Discussion

The mapping tool as a conversational piece should facilitate a reflective process that enables learning, for participants to provoke engagements, to start thinking and practicing differently. The results from mapping are not necessarily scores of the agency's capability but objects to further discussions and alignments. While the quantitative data generated from the questionnaire can be used as evidence for future planning, it is of great importance to encourage the participants to value group discussions, to capture new learnings and misalignments from their sharing.

We found that the mapping tool presented a platform and opportunity for front-line staffs and lower-level employees to share candidly with the middle and senior management, about what they think of the current practice of innovation and design adoption. Another observation was that it enabled the officers to identify the existence of a gap between "what they believe they should be doing" and "what they actually are doing".

The officers are familiar with the design process and have an open-mind towards changes. However, based on the collective overview of different responses, barriers of adopting design in everyday work were revealed. The lack of ability and opportunities to apply design tools at work hindered motivation to practice design. With efficiency and effectiveness as key performance measurements, these stifled the officers' initiative to work against ingrained processes and highlighted their discomfort in being assessed differently. Doubts in the value of design to improve business were apparent. To showcase benefits of design approaches versus legacy work systems, there is a need for a measurement framework to validate success or failure of applying design.

Realisations of misalignments dialled-up difficulties and differences in expectations to embed design at various levels in the agency. The direction of transformation needs to be clearly communicated, especially when these design champions are supposedly leading the design strategy. Finding a common ground and a common language between design and business functions will be necessary to proliferate design into the agency and to implement a sustainable strategy.

The experiment and findings presented in this paper are preliminary results from on-going refinements of the mapping tool. We will continue iterative tests of the tool with diverse public organisations in Singapore to refine its language, visualisations and analysis formula. We will also touch-base with past agencies on their design adoption progress to analyse contributions of the mapping tool. The design of a set of structured activities to support the participants to amplify and codify new learnings derived from mapping could be of further work as well.

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