



This work is licensed under  
a Creative Commons Attribution-Non Commercial-  
ShareAlike 4.0 International License.

## **CRAFT CHANGE: BEHAVIOUR PROGRESSION FRAMEWORK – EVALUATION IN QUASI PARTICIPATORY DESIGN SETTING**

*Shivani Sharma*

Tata Consultancy Services, Yantra Park, Pokharan Road 2, TCS Approach Rd, Thane West, Thane, Maharashtra, India, 400606. Email: shivani8.s@tcs.com

*Ravi Mahamuni*

Tata Consultancy Services, Tata Research Development and Design Centre, 54-B, Hadapsar Industrial Estate, Hadapsar, Pune, Maharashtra, India, 411013. Email: ravi.mahamuni@tcs.com

*Sylvan Lobo*

Tata Consultancy Services, Yantra Park, Pokharan Road 2, TCS Approach Rd, Thane West, Thane, Maharashtra, India, 400606. Email: sylvan.lobo@tcs.com

*Bhaskarjyoti Das*

Tata Consultancy Services, Tata Research Development and Design Centre. Email: bhaskarjyoti.das@tcs.com

*Ulemba Hirom*

Tata Consultancy Services, Yantra Park. Email: ulemba.h@tcs.com

*Radhika Verma*

Tata Consultancy Services, Tata Research Development and Design Centre. Email: radhika.verma@tcs.com

*Malay Dhamelia*

Tata Consultancy Services, Tata Research Development and Design Centre . Email: malay.d@tcs.com

### **ABSTRACT**

Sustainability concerns often stem from human behaviour and practices, and needs sustained change. Product and service design, while driving solutions, are also influential in bringing about change in human behaviour. Yet most designers do not have adequate design guidance based on the established behaviour change theories. The proposed ‘CraftChange’ Behaviour Progression Framework enables designers through a choreographed process and toolkit of canvases and cards, to arrive at ideas and service concepts which facilitate a user’s behaviour progression—from an unaware state to being an advocate of change. The usefulness and effectiveness of this framework was evaluated through a case study aimed at designing a service design solution to “encourage continual learning within a multi-cultural setting”. Initial results are encouraging and show the promise of being the preferred toolkit for service designers aiming at sustainability initiatives like encouraging smart transport, promoting healthy food habits, and amplifying sensitivity towards the environment.

Key Words: Design for Sustainability (D4S), Design for Behaviour Change (DfBC), CraftChange, Service Design

## 1. INTRODUCTION

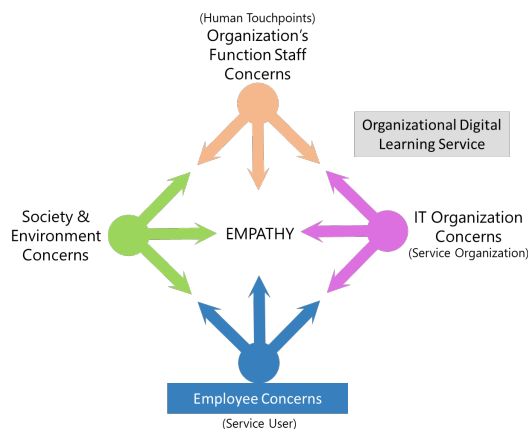
Human behaviour is a crucial aspect of sustainability (Fischer, et al., 2012) (De Young, R., 1993) (Lilley, 2009) and enabling design to facilitate the desired change in user behaviour is critical in envisaging a sustainable tomorrow. Design for Sustainability is not a single stakeholder centric approach but demands extensive participation from all the stakeholders in our living ecosystem, who maintain a symbiotic relationship with each other, such that their desires, concerns and constraints are taken into consideration from the initial design phase itself. Reflecting on the current design practices for ecosystem-wide sustainability, Design for Circular Economy (DfCE) (Ellen MacArthur Foundation, 2015) is globally accepted today as an approach to sustainable design by facilitating the industry to transition from being a linear-based economy to a circular or closed loop one, enabling multiple value streams and cascading resource usage by promoting ‘usership of services’ rather than ‘consumership of products’. Sustainability design directives such as DfCE envisions to change stakeholders’ behaviour at various stages of a resource life-cycle through services that facilitate effective and sustainable resource management. Developing functionally superior technology and infrastructure may not alone address the severe sustainability issues rooted in human behaviour. Achieving desirable behavioural changes at individual, societal, and organizational level is the need of the hour in order to design for a sustainable future ecosystem.

It is a well-established fact that design influences human behaviour (Fogg, 2009) (Lockton, 2010). Designers can consciously design products, services, and spaces in such a way that it facilitates the intended desirable change in users’ behaviour and eventually help them to sustain the behaviour change in a progressive manner. Service Design being a multi-disciplinary, human-centred, co-creative approach, can facilitate a holistic and practical outlook to behaviour change through its product-service systems. Design intervention approaches could be informed by ample of behavioural theories, principles and models from Behavioural Sciences to inculcate a sustained behaviour change. However, the designers and stakeholders need an appropriate actionable guidance to design interventions for a progressive behaviour change of users. Currently there are a few frameworks and toolkits available to guide the designers (Mummah, Robinson, King, Gardner, & Sutton, 2016), especially for designing services aimed at behavioural change (Mahamuni, Khambete, & Punekar, 2019).

CraftChange is a behaviour progression framework and toolkit (Mahamuni, Khambete, & Punekar, 2019) which intends to guide and facilitate designers to strategize, ideate and detail out design interventions for progressive behaviour change of users in a given context. In this paper we aim to evaluate the usefulness and effectiveness of this framework by applying it in one of our service design case studies explained further.

## 2. ‘CRAFTCHANGE’ FRAMEWORK

The CraftChange framework as shown in Figure 2, proposes a design intervention process from the perspectives of multiple stakeholders to progressively change user behaviour. The CraftChange framework is driven by the *Empathy Square* [Figure 1] where the four nodes represent different stakeholders– Service User, Society and Environment, Human Service Touchpoints such as Service Staff, and Service Provider Organization, for any given service-system and context for which Design for Behaviour Change is to be undertaken. The framework supports design interventions by addressing the concerns of all the four prime stakeholders in order to make design interventions more holistic and ecosystem based. Design can start from any anchor node and then move to the other nodes as shown in Figure 1.

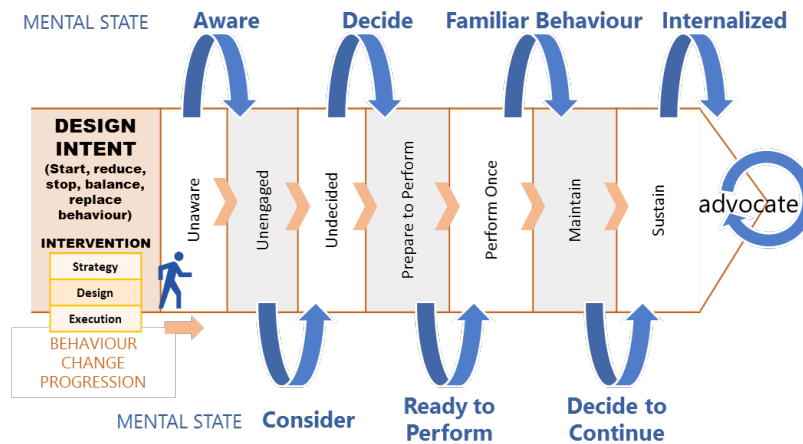


[Figure 1] CraftChange - Empathy Square (Mahamuni, Khambete, & Punekar, 2019)

Figure 2 also shows different mental states that the user goes through in the behaviour change process. A designer needs to ideate different sets of design interventions for each of the user’s behavioural stages from “unaware” state to “sustain” state.

CraftChange framework is operationalized through process, canvases and cards such as *Current Intervention Cards* for user research phase, *Ignite Cards* for ideation phase, *Challenge Cards* for validating and prioritizing ideas and *Enrichment Cards* for checking completeness of the ideas. Different kinds of cards are meant to provide design

guidance based on the behaviour change principles. The said framework is undergoing initial testing and found to be promising. The work is in progress and would be published shortly.



[Figure 2] CraftChange Behaviour Progression Framework (Mahamuni, Khambete, & Punekar, 2019)

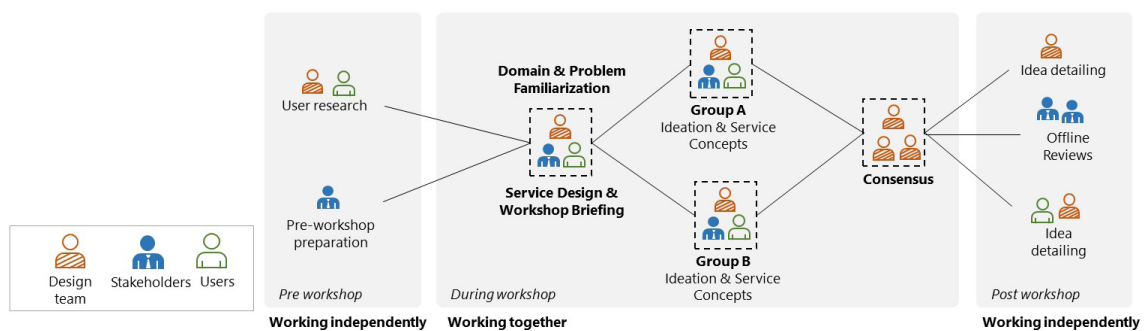
### 3. CASE STUDY – “ENCOURAGING PROACTIVE AND CONTINUAL DIGITAL LEARNING IN MULTI-CULTURAL SETTING”

We used CraftChange framework in one of our service design case studies, aimed at encouraging organization employees working in a multi-cultural setting, to learn proactively and continually using digital environments and revamp outlook towards learning. The latent intention of the design activity was to empower employees of a multi-cultural globally spread large organization, to enhance employee’s productivity and performance by offering personalized and adaptive learning services.

User research was done by the designers and design researchers to understand the concerns, constraints and aspirations of employees about learning. Existing interventions and initiatives were extracted to review the learning support offered by the organization. The key concerns derived through the user research are: Despite of a lot of training and educational digital platforms being available for the employees to learn, individuals focused on learning only when they were required to in the job, learning at organization was more of a compliance to the organization mandates rather than a proactive activity for gaining skills, the perceived importance of gaining domain knowledge was low among employees while they focussed on their existing areas of work expertise, time crunch during work hours was one of the distinct causes mentioned for not using the learning channels and platforms continually.

### 4. METHODOLOGY

The design activities were carried out in quasi-participatory (Mahamuni, Sharma, Lobo, Hirom, & Khambete, 2018) manner, as shown in Figure 3, where some of the activities like user research was done before the workshop by some of the participants. For the workshop, all the participants met together and got familiarized with the problem statement, service design and CraftChange framework. Then they were divided into two teams, wherein the teams worked separately on solving the problem. After the workshop, participants individually or within small teams developed the service components further, with the possibilities of engaging again as and when required.



[Figure 3] Quasi-participatory process

During the workshop aimed at ideation and creating solution service concepts, the two teams consisted four and five members each from multiple professional backgrounds - psychology, information technology, designers and design researchers. Incidentally all these team members were also the users of the service under consideration. One of the team members in each team played the role of the workshop facilitator. Facilitators also noted the observations during the workshop.

At the start of the workshop, service design overview was presented to both the teams together in order to

make them acquainted with service design. The CraftChange framework and the process was explained to the workshop participants. Further, the problem statement, the design brief and user research findings were discussed in details. The team was then divided into two ensuring trans-disciplinary participation in both the teams. The two teams simultaneously and separately used the behaviour change idea trigger cards and design ideation canvas to ideate under the guidance of facilitators.

The teams clearly spelled out the stated intention and latent intention of the service users along with the current and target behaviour of user. It was mutually decided that the team will first address the concerns of service users i.e. employees and then focus on other stakeholders as shown in Figure 1. The ideation was aimed towards identified employee target behaviour i.e. to inculcate proactive and continual learning behaviour among the employees, while also balancing other stakeholders' needs and concerns. The teams were familiarized with the concise personas created earlier on the basis of tacit knowledge (Mahamuni R. , et al., 2018) and refined with user research findings. The personas were – a bread earner persona from rural background, a confident and young persona considering life over work, an enthusiast niche skilled persona, a senior feeling monotony in his work and looking for a job or role change; identified through user research. The teams were allowed to choose one or many personas for the ideation.

For empowering the persona to progress from one state to another (as shown in Figure 2), a round of ideation session was carried out using one set of idea trigger cards from the CraftChange toolkit. From the user research, it was known that chosen personas intend to learn as and when required for their work, but the learning is not continual and proactive. Team 1 considered the scenario where the persona knows about the various learning services and resources provided by the organization and hence engaged in ideating for the subsequent progressive state of “maintain”. Team 2 chose the scenario where the employee is unaware of the learning services and hence intends to be in the behavioural stage of “unaware”. The cards were distributed within the teams to ideate for the given design brief. The cards were used individually by the team members and ideas were drawn on post-its. The cards were further rotated within the team and ideation was repeated using the exchanged cards. While using the cards, participants were encouraged to write their suggestions on improving the effectiveness of the content of the cards.

At the end of ideation phase, feedback was collected from the participants to know the effectiveness of the ideation process and the role of the cards. Participants appreciated the systematic ideation process and further proceeded with clustering of ideas. It was observed that though the teams initially focussed in ideating for the selected phase of the CraftChange Behaviour Progression Framework, ideas were also generated for other phases.

Then ideas were scrutinized for gaps in their relevance to the given user context, persona behaviour, and the concerns and constraints in purview of the other nodes of the Empathy Square. As a next step, the ideas were clustered based on their affinity to each other as a group exercise. Idea clusters like “Learning with Partners”, “Learning Lab”, and “Intelligent Learning Content Design” were valued to be innovative and effective, with respect to the other clusters for the chosen scenarios.

The selected idea clusters in both the teams were then detailed further using various service design techniques like offering maps, system map, touchpoint matrix, high level blueprint and journey map. This detailing of the idea cluster helped to connect the discrete ideas as one component service.

The detailed component services were further refined to implicitly attend to the various concerns, constraints and available resources of all kinds of stakeholders involved in its implementation. It was observed that the various component services were connected with each other to form a complete service.

## 5. OBSERVATIONS AND FINDINGS

Observations were noted by the facilitators of the two teams throughout the workshop. Oral feedback was also collected from the participants at intermediate stages of the workshop. The participants also made notes in pencil to provide feedback on the content of the cards in the toolkit.

The participants appreciated looking at the problem of continual learning from the lens of service, experience and behaviour change. Despite majority of the team constitution being non-designers and non-service designers, they were able to effectively arrive at a promising number and quality of ideas through the guidance of the framework and tools. Sharing behaviour principles and concepts with the team helped trigger rich ideas. This along with the framework and tools facilitated the team to think across the mental states of the users, from unaware to advocate. The combined ideas generated by the two teams exceeded 100 ideas within a span of around two hours. All mental states had sufficient number of ideas generated. The stages which had lesser ideas were revisited to add more ideas. The ideas generated were then clustered into three to five holistic and connected service concepts. Care was taken to revisit whether the ideas in the clusters were covered in service concepts.

The Empathy Square was seen as a useful construct towards balancing the concerns of the four stakeholders – the service users (employees), the support staff (HR, Learning departments, administration and other functions), the organization, and where possible appreciating the environment and society.

In general, it was observed that teams were able to use the guidance from the suggested process or deviate from it whenever needed. Participants liked the approach towards the problem as a behaviour change problem. None of the ideas were discarded. In fact, all the ideas were clustered to create meaningful service components and detailed



out to make it closer to realizable state.

Participants who were not involved in user research took longer time to understand the problem context. The workshop had provided a short period to showcase the current problems and constraints as findings from the user research to sensitize the participants. But it evidently needs more time and discussion to have all participants contribute effectively sooner. It was observed that participants who were part of user research were more active initially during the workshop as compared to others. There was also a time crunch situation seen during the period of detailing ideas. Here, a quasi-participatory approach seemed effective, where certain activities are done by part of the teams before and after the workshop. Mainly, here the user research was done before the workshop. The service concept clusters were further detailed and refined after the workshop too.

## 6. CONCLUSION

With the intent of evaluating the usefulness and effectiveness of the CraftChange Behaviour Progression Framework, we utilized it in a workshop setting to arrive at an effective service design solution to bring out sustained change in employees' behaviour towards learning, such that they proactively and continually learn. The participants of the workshop found the guiding process, canvases and cards to be useful in ideating and carving out innovative solutions for a learning service. The toolkit of canvases and cards were useful to trigger and channelize a large number of behaviour change solutions.

The Empathy Square provided guidance to focus on addressing the concerns of not just the employees, but also the concerns of staff that would be involved in providing the learning service, the concerns of the organizations, and where suitable the society and environment.

The CraftChange Behaviour Progression Framework [figure 2] provided a very structured guidance to the participants to think of ideas progressing systematically from a specific mental state (unawareness) towards sustained and internalized. Rather than thinking of the problem solutions from a high level perspective, the participants could now arrive at solutions which systematically take the user across the stages, from 'unawareness' (or other starting points) till 'sustenance'. This approach was found to be systemically informing and guiding the design intentions and interventions to achieve desirable behaviour change at individual and organizational level.

As evaluation of the process, few minor issues were noted such as communication challenges in the canvas and content, facilitating time, and team engagement and dynamics. With these inputs, we are in process of evaluating the framework further by also applying it on more number of small scale as well as large scale problems. Considering the usefulness of the framework, we aim at further improving the toolkit with findings from all the ideation workshops. In future, we intend to use this framework and toolkit for solving design problems in varied domains including public sector, private organizations, travel and hospitality etc.

## BIBLIOGRAPHY

1. De Young, R. (1993). *Changing behavior and making it stick: The conceptualization and management of conservation behavior*. Environment and behavior, 25(3), 485-505.
2. Ellen MacArthur Foundation. (2015). *Towards a Circular Economy: Business rationale for an accelerated transition*. Ellen MacArthur Foundation.
3. Fischer, J., Dyball, R., Fazey, I., Gross, C., Dovers, S., Ehrlich, P., . . . Borden, R. (2012). *Human behavior and sustainability*. Frontiers in Ecology and the Environment, 10(3), 153-160.
4. Fogg, B. (2009). *A behavior model for persuasive design*. 4th international Conference on Persuasive Technology. ACM.
5. Lilley, D. (2009). *Design for sustainable behaviour: strategies and perceptions*. Design Studies, 30(6), 704-720.
6. Lockton, D. (2010). *Design with Intent: Influencing people's behaviour through products & services*. Made in Brunel: 250 Innovative Ideas. London: Papadakis.
7. Mahamuni, R., Khambete, P., & Punekar, R. (2019). *Behaviour Progression Framework for Designing Sustained Behaviour Change*. Research into Design for a Connected World (pp. 39-50). Singapore: Springer.
8. Mahamuni, R., Khambete, P., Punekar, R., Lobo, S., Sharma, S., & Hirom, U. (2018). *Concise Personas Based on Tacit Knowledge - How Representative Are They?* Proceedings of the 9th Indian Conference on Human Computer Interaction (pp. 53-62). Bangalore: ACM.
9. Mahamuni, R., Sharma, S., Lobo, S., Hirom, U., & Khambete, P. (2018). *Quasi-participatory service design in organizational context: A case study*. ServDes2018, Service Design Proof of Concept, Proceedings of the ServDes. 2018 Conference.
10. Mummah, S., Robinson, T., King, A., Gardner, C., & Sutton, S. (2016). *IDEAS (Integrate, Design, Assess, and Share): a framework and toolkit of strategies for the development of more effective digital interventions to change health behavior*. Journal of medical Internet research, 18(12).