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Developing a Design Led Innovation Sprint: A Case Study within a Global Engineering Firm

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Design for business and strategy is now accepted as a means to develop an advantage within established sectors, particularly those that have a need to innovate. There are many design thinking proponents and methodologies available to industry. Whilst they may share similar attributes, such as a customer-centric philosophy, at their foundation they differ in the steps they take and the delivery method that is applied. We present the Design Led Innovation (DLI) Sprint as a process to diffuse design methodology to a non-design audience. The development of the DLI Sprint at the University of Technology Sydney, Design Innovation research centre was a consequence of collaboration between researchers, practitioners, and industry partners. The DLI Sprint is a shorthand method of a full program that although is in its infancy is delivering promising results. The DLI Sprint offers organisations a practical but thorough introduction to the broader principles of DLI and a method to tackle complex problems and explore new products and service offerings. The DLI Sprint is illustrated through a case study of a global engineering firm; reflection upon this has presented challenges and opportunities for the further development of DLI Sprints in the future.

Keywords: *Design led innovation, design thinking, innovation, design sprint, innovation sprint, sprint*

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Introduction

Successful applications of design innovation can be found in various arenas, including for government and business as well as in the social and cultural spheres (Bucolo, 2015; Dorst, 2015; Brown 2009; Verganti, 2009). In this paper we seek to present a short version of a design thinking program that incorporates principles of extended innovation methods but can be delivered in a fraction of the time.

Dorst (2015) discusses the need for today's new problems to be addressed in a radically different way, as today's issues are incredibly complex and customary methods are not necessarily appropriate. Dorst utilises an approach that revolves around the framing and reframing of problems to create a new approach for the problem at hand. Manzini (2015) agrees, declaring that design and design driven methods are an imperative in our complex and fast changing world. Indeed the importance of agility and adaptability within organisations is an imperative as evidenced by the difficulties observed by traditional organisations, particularly when responding to what can be described as an evolving environment or disruption. This problem is often evident within large organisations and is summed up well by Jennifer Westacott, Chief Executive of the Business Council of Australia, who said, *"It's vital that we don't assume that innovation is solely in the domain of startup companies."* (As cited in Dattner, 2016).

Design driven methods are one technique available to organisations when they face these challenges or have a need to innovate. The external environment may insist that organisations grow, differentiate, embrace and exploit value from science and technology or cease one course of action and explore another. Design methodologies provide a structure to do this in a controlled way. Bucolo (2015) sees value in the design process that goes beyond simply coming up with new ideas. He describes the process as ensuring the solution is purposeful, suggesting that design plays a role in not only exploring new opportunities but in de-risking the eventual implementation and adoption.

The power of innovating by design comes from the scaffolding it can provide to multifaceted problems. According to Liedtka and Ogilvie (2011), design thinking is a systematic approach to problem solving. The process involves certain hallmarks, such as being human-centred and embracing iteration. Brown (2009) discusses the importance of experimentation and how this can be achieved through rapid prototyping; in the UTS Design Innovation research centre we endorse this notion and attendees of our

programs always leave with an experiment or project to complete. The experiment is a stepping-stone; it is about trying something new, in a protected way that will hopefully lead to an advantage for an organisation.

It is important to note that successful outcomes are typically the result of a combination of a new approach (or lens) combined with the existing expertise of individuals. Martin (2009) supports this view and stresses the importance of integrative thinking in the design process. Proponents of design do not own this concept; undeniably it is evident in many business texts including the classic Tushman and O'Reilly article *The Ambidextrous Organisation* (2004). Tushman and O'Reilly highlight that enterprises are adept at incremental movements, such as refining an existing offering, but struggle when it come to a radical shift, such as launching a new service. Design does offer a platform to consider radical shifts using a proven approach; radical innovation is one means of establishing competitive advantage (Verganti, 2009).

There are many methods for addressing the issues we have mentioned above including agile and lean approaches. Furthermore, many innovation and design-orientated programs provide a framework for confronting these or similar scenarios. We present the Design Led Innovation (DLI) Sprint as a new and valuable approach for such problems. This short format was designed for swift interactions and plays an important role in introducing firms to DLI in an efficient manner. Although it is short in duration it utilises many of the same practices as a full program, thus the DLI Sprint provides a comprehensive application of DLI and an effectual way of diffusing a design driven approach into an organisation.

Introduction to the DLI Sprint

The DLI Sprint concept is drawn from the full design-driven methodology of Bucolo, 2015, as detailed in Thurgood, 2015. The full method involves a series of design capability-building workshops and other activities over a long-term engagement, typically requiring at least a six-month commitment but often lasting several years. Participants are generally working on a live (real-time) project, with the eventual aim of achieving organisational transformation through design integration. In the Sprint, the existing DLI methodology is streamlined to comprise a three to five day intensive program. The aim is to deliver a rich experience to time-poor executives.

A sprint is a short intervention that focuses on a specific topic or problem (Knapp et al., 2016). The sprint concept, delineated in Figure 1 below, is about moving from the current state, or taking steps to move beyond it, to a preferred state in a matter of days. The method we've

developed involves iteration, in the form of experimentation or projects, to ensure the eventual outcome is tested and informed. It differs from many similar product-centric approaches in its flexibility. The DLI Sprint is designed to be applied to multiple contexts including cultural challenges, service offerings and growth opportunities with an aim to establish a lasting point of difference to competitors.

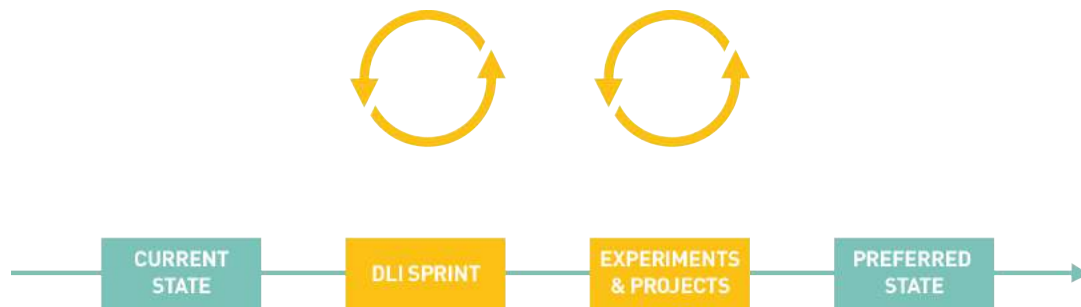


Figure 1: DLI Sprint concept

The DLI Sprint program itself can act as a prototype for an organisation, a proof of concept for a longer and more deliberate collaborative program using DLI methodologies.

The DLI Sprint

In the remainder of this paper we will outline the new Sprint methodology then illustrate its early application to a real industry program. We have included a summary of our preliminary findings applying this method with a partner organisation.

The DLI Sprint starts with gaining an understanding of today, then progresses to create a new future, before culminating in an experiment or project brief. The language and structure of the experiment or project brief are decided in association with the partner firm, to ensure that the language is meaningful to the organisation and that the outcome can be assessed in a fashion that will resonate within the firm. Typically an experiment is low cost and designed to provide an insight into how successful a new activity will be. Sometimes it helps identify the real opportunity or shapes further experiments that lead towards the new desired state.

In general terms, an overall aim of the DLI Sprint is to raise awareness and capability of DLI. Additionally the method aims to push thinking and encourage a different mindset whilst working on organisations real challenges. To achieve this we developed a framework comprising five

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 stages, which are outlined below in Table 1. Each stage is described in detail below.

Table 1: The DLI Sprint stages

Stage	Title	Description	Tools/Approach
I	Understand	Unpack the current state of business and it's current problems	Business Model Canvas Value Chain Analysis Stakeholder Map Extreme Customer Exercise Persona's Journey/Lifecycle Map
II	Envisage	Identify opportunities in new markets	Three Horizon's Framework Brainstorming Ideal Journey Map Narrative Template Narrative Development
III	Explore	Co-create with real customers or clients	Narrative Delivery
IV	Create	Analyse work completed thus far and understand what it means	Thematic Analysis Future Business Model Canvas
V	Align	Implement strategies and test scenario's to move towards the desired state	Experiments or Project briefs

I. Understand

The Understand stage involves unpacking and assessing the organisation's business, customers, problems and approach to innovation. Sprint attendee's detail their current organisational purpose, business model, customer personas, value proposition, and ways of innovating. We

also seek to examine where an organisation sits in the value chain, we then look to introduce the concept of empathy during this stage through tools we will revisit during the process. No activity is designed to be difficult and the aim is that participants will be able to use the tools again once they complete the formal stages of the program.

Often we find little differentiation between our partner firms and their competition. In many cases a company could copy and paste the value proposition, or entire business model in many cases, into a competitors business and not notice any significant differences. Organisations are often not aware of their clients deeper needs and tend to interact with them on a superficial level. Nor are they aware of what role they play in their customers value chain – for example, they do not pay attention to their client's customer.

The Understand stage should identify opportunities through discussions and activities that open up the situation to expose problems. Depending on the context of the Sprint this stage should determine the issues detailed in Table 2. Upon completion of the initial stage we draw a line in the sand and agree not to regress, the second stage of the DLI Sprint is all about moving forward. We acknowledge that innovation is a team activity and the participation of everyone is expected, all participants have been selected because they have something to offer and we want as many diverse voices to ensure multiple perspectives are offered.

Table 2: Understand checklist

The Understand stage should:

- ✓ Uncover why the existing predicament exists and establish or draw attention to the burning platform (urgent problem)
- ✓ Determine if an organisations strategy and activities are aligned to their customers and business model
- ✓ Reveal any discrepancies amongst organisational members about who their customers are and what value they provide to them
- ✓ Identify issues with current revenue streams and examine other aspects of an organisations business model
- ✓ Highlight the understanding of current customers and consider their challenges and aspirations – through Persona’s and Journey Maps
- ✓ Investigate where an organisation or department sits in the value chain
- ✓ Consider orthodoxies and legacy issues that exist within a firm that may be holding it back

II. Envisage

The second stage is about an exploration of new possibilities beyond the current state. We employ empathy to obtain a hypothetical understanding of the possible problems and emotions of a future stakeholder, envisaged through the use of Personas and Journey Maps. We create an ideal future vision where we have designed out the major pain points identified in the current state. This exploration of new possibilities assists in moving beyond today’s problems.

To assist us in getting to that space we may reference Baghai, Coley & White’s (2000) work in *The Alchemy of Growth*, namely the ‘Three Horizons’ framework. The aim being to stretch thinking beyond the incremental level, and to encourage the consideration of new idealised and extreme states. At the beginning of this stage we often complete an extreme customer exercise that will provide a range of future stakeholders for participants to choose from. Although we allow teams to choose who they focus on, by building a Persona of that future customer as a starting point, we encourage them to

get out of their comfort zones and acknowledge that whichever persona with which we move forward, it is one of many upon which the process could be repeated on.

Often an ideation or brainstorming session is required to facilitate third horizon (Baghai et al. 2000), or extreme, thinking. We encourage this as a way to assist in getting options on the table and to help in getting participants into the “ideal” space to complete the next activity, which is a Journey Map. The Journey Map describes a possible future stakeholder or extreme users journey over a period of time. Generally the Journey Map describes the stages of a future customer overcoming a problem identified in the Understand phase and achieving their goals. This tool details touch points or interactions of the customers with the organisation’s products or services and includes empathetic information such as the emotional aspects of these exchanges. This activity will also assist in reframing existing pain points for users, customers, colleagues or clients, and identify opportunities to meet latent needs.

Every activity is built upon as the program progresses. It is worth noting that we also make choices as we are building. This iterative process allows attendees to play with ideas and refine them as the process unfolds, allowing them to learn economically. If it is not working we acknowledge this, identify why it is not working and then consider where we want to be and what future customer the participants should be targeting on behalf of their organisations.

The Envisage stage should:

- ✓ Identify potential new stakeholders and markets or new ways to address existing stakeholders unarticulated needs
- ✓ Examine the interactions before, during and after the proposed/current product or service offering and employ empathy
- ✓ Closely investigate stakeholder pain and gain points
- ✓ Reframe problems so we can move past today's blockers

III. Explore

This stage culminates in the creation of a narrative, which is delivered to clients, customers, colleagues or users. A narrative involves creating a proposed or temporary solution and converting it into an ideal business model or customer journey. It involves the exploration of a new value proposition based on the assumed needs of a future stakeholder. But the hypothetical solution is but a carrier to obtain a description of the real meanings behind problems for stakeholders so we can ideate around validated information. The narrative also allows participants to probe the deeper reasons the (reframed) problems exist from a stakeholder perspective. Participants conduct interviews with real stakeholders using story to incite discussion and further open up problems and opportunities. The narrative is a tool used to encourage or provoke individuals to get to a deeper level. It is delivered in a semi-structured style that allows the deliverer to ask further questions and probe end users. We are not looking for superficial information but want to understand root causes and underlying problems of situations or interactions. Participants should not see this as an opportunity to sell but rather an opportunity to listen and learn from customers with a view of moving past previous issues and creating something new.

The narrative is created, firstly with the aid of a template, and eventually is developed to involve images that will be displayed to the clients or customers. It also involves writing a carefully thought out script which is designed to address problems, which could be considered assumptions at this point as these issues are yet to be validated or invalidated. We

deliberately choose a semi-structured format to enable the freedom to explore interesting discussion points. Whilst there is only one individual delivering the narrative the other team members are busy taking detailed notes, recording key insights, quotes and comments on body language, the quality of the analysis will rely on the quality of the record or notes from the interviews. Whilst it is preferable to record the interview and have it transcribed this is not always possible due to timeframes and ethical considerations. In addition to note taking and observing, the other team members are given an opportunity to ask questions at the end of the formal delivery. The following point cannot be stressed enough, when the formal delivery of the narrative ends the interview does not. Often the best information is captured after the narrative, in general conversation, as the process has served to open up a situation to the point where it can be discussed in an effective manner. The deliverer and note takers should absolutely continue taking notes and engaging because although the story may end the discussion should not. Undoubtedly the individual delivering the narrative will miss something, and the note takers should not only clarify anything that was unclear but also ask questions around what they've heard to get more detail.

The narrative is typically delivered to approximately ten customers, if time allows. The notes, or transcriptions, of all the sessions are then used in a thematic analysis to uncover deeper stakeholder needs and frame them in a way where we can design to move beyond the current state. Key quotes and insights are highlighted and clustered into themes and addressed using a simple and effective format that enables us to shape the next stage of the program.

Table 4: Explore checklist

The Explore stage should:
✓ Redefine problems at an emotional level
✓ Design out pain points and/or leverage gain points
✓ Narrate problems and solutions from a stakeholder perspective
✓ Test if assumptions are correct with customers/clients/end users
✓ Reveal meanings and values outside of the problem context
✓ Reframe problems with more focus

IV. Create

The completion of the analysis component involves taking this newly discovered and collated information and creating a new ideal but realistic value proposition that can feed into a new business model, that the company can, depending on the context of the program, consider working towards. This phase could align with what some proponents of design thinking call prototyping, it happens in the form of an experiment or project. Participants undertake to complete an experiment or project within a specified period of time and report back on the outcome. An experiment or project is a logical way to test a new product or service offering in a safe environment.

Further to this we often recommend that these refined insights be used to update personas and create new value propositions and business models. Based on analysis of the interviews we discuss what small or next step could an organisation take to achieve these new goals. Typically we openly acknowledge that we've been offline for a few days and spoken to a handful of clients, users, colleagues or customers and further work is required to build a stronger business case around key findings. This is done via experiments or selected projects but also highlights a key difference between the DLI Sprint and the full program, which could allow for additional testing within its time frame. The Sprint provides a starting point and it is assumed that attendees will continue to practice their newly

learned methods on their own accord to fully appreciate the value of the program.

Upon completion of the projects or experiments the team reconvenes to discuss findings and consider next steps. The purpose of the experiments and projects was to test outputs from the sprint and provide a validated state for the organisation to head towards. The benefit of the experiments lies in de-risking this move and ultimately leading the way towards implementation in a controlled way.

Table 5: Create checklist

The Create stage should:
✓ Determine stakeholder-centric and ideal future-state value propositions
✓ Mitigate risk in the form of experiments or projects

V. Align

The Align stage aims to produce a new strategy to achieve the validated and desired state. It occurs as a result of the outputs of the Sprint but does not occur during the formal program. This is a crucial stage as everyone who completes the Sprint leaves with a set of planned actions, it is not a three or four day talk-fest but a practical and action-orientated program that culminates in a body of work to shape the next steps for an organisation. The Align stage begins by assessing the projects or experiments that have been completed post-sprint.

It is also important that we compare current state (from the understand stage) and the ideal future states to inform the new strategy that is leading the firm towards achieving desired outcomes. This comparison could be considered a gap analysis as we look at where a company is and where they want to be, and then consider how they would close that gap. This analysis may require developing new products or services but equally it could involve a re-examination of organisational structures or a complete re-branding and overhaul of existing operations. The Align stage should also produce a plan that identifies what activities are to be stopped, and what new resources are to be acquired.

The Alignment phase should not only consider but also result in actual change. It involves empowering individuals and groups within the organisation to make decisions and act on them. It is the culmination of individuals experience combined with a design-centric approach that takes into account users, customers, clients or colleagues to create a robust platform from which to launch.

Table 6: Align checklist

The Align stage should:
✓ Consider a path to move towards the desired state
✓ Empower organisational members
✓ Result in actual change

Case Study

The DLI Sprint was developed in collaboration with an industry partner. They are a global engineering firm with offices in some 30 countries and approximately 7000 staff. Having undertaken a successful domestic DLI campaign over a period of 12 months, there was a strong desire to extend design led practices to both their local and offshore colleagues in an efficient and consistent manner. Working in collaboration with the Chief Innovation Officer (CIO), the UTS Design Innovation team applied the DLI Sprint approach on three occasions domestically and twice in the partner organisations South African offices. Participants in the program included representatives from their Executive Committee, C-Suite and Directors, through to junior engineers.

The series of Sprints had several aims including exposing key people to the power of design across geographies and also across corporate silos whilst imparting knowledge in a short period of time. A key purpose of the program was to push attendees thinking further than they would have gone if left to their own devices, to consider alternative options to improve and grow. Considerable shifts in attitudes and acceptance of new ways of working were observed and substantiated in surveys and interviews.

The DLI Sprint program represented an alternative for our partner firm to numerous workshops over a longer period of time, whilst stimulating demand for further participation in design and innovation more broadly.

Typically attendees volunteered to participate in the Sprint; however, we did seek a broad spectrum of staff members from within different departments and levels to get a cross-section of the organisation. Given the investment required, availability of key staff and successful management of their typical workload allocation was paramount.

Key outcomes included raising awareness within the firm, building capability so that the process can be replicated and showcasing the value of design in a real time setting. Identifying champions who can continue the cause is of paramount importance; finally we acknowledge that encouraging different conversations to establish a new paradigm from which to launch off is a key benefit to bringing in an alternative perspective.

A consistently pivotal moment, during the five sprints presented in this paper, arose during the narrative delivery; participants were able to test assumptions and obtain deep customer insights (Price et al., 2015), which form the evidence base for experiments. This co-creation phase highlights the importance of placing customers at the centre of what an organisation hopes to achieve. Without a customer there is no market. The thematic analysis also allows for a pathway to Business Models and Value Propositions that can ultimately be prototyped (Brunswick, et al., 2013). It is this combination of deep customer insights and a business model focus that fosters a strong footing for an organisation to progress beyond the current state.

In Table 6 we show the key capabilities and outcomes, evidenced by quotes collected during an exit survey, as a consequence of participation in the program:

Table 7: DLI Sprint preliminary observations

Outcome	Quote from Participant	Facilitator Observations
Raise awareness	"I was converted during the process" - Participant PBE10 "Younger staff need to see this" - Participant PBE14	The first step in the innovation journey is to establish that there is a need for change or a desire to explore alternatives and raise awareness

Capability transfer	<p>“I will be implementing this approach as much as possible in my current projects and more so on new ones” - Participant PBE8</p>	<p>A key goal with the DLI Sprint is that it is accessible and in time repeatable. We pride ourselves on ensuring that attendees can use this approach in their own practices</p>
Show the value of design	<p>“We should have a directive and measurement on how we transfer the knowledge with others in the company” - Participant PBE1 “Thanks, it was great and worth every minute of my time” - Participant CI10</p>	<p>The value of design and DLI continues beyond the sprint as the mindset we encourage provides a new way of approaching complex problems. The sprint provides a pathway to a preferred future in a controlled way via experiments and projects</p>
Identify champions	<p>“I aspire to be a DLT/I Facilitator” Participant PBE6</p>	<p>Identifying champions who will continue the journey is essential</p>
Stimulate different conversations	<p>“Ideal to “unlock” from current thinking processes” - Participant PBE4</p>	<p>Throughout the sprint and beyond we advocate thinking, working and engaging differently</p>

DLI Sprint Opportunities And Challenges

Time constraints represented an issue on two levels, one being the intensity of the program, particularly the three-day format, and the second relating to individuals being offline for a period of time. The three-day format is fast paced and we pushed attendees to get to a result by the conclusion of the sprint. We aimed to create an environment where we challenged people, beyond time pressures, we wanted individuals to leave their comfort zone and consider an alternative way of solving complex problems. Focus became very important as we build sequentially over the course of the sessions, if a participant misses a key moment it will likely impact their experience and the quality of their output.

Obtaining buy-in from groups with no perceived urgent need for change was a challenge. These groups appeared to have a view that business is good and as market leaders they do not have an imperative to spend time considering what is around the corner, a new market segment or an alternative offering. Disruption does not come from where you expect it and complacency in an environment where innovation is an imperative, is an impediment to long-term business success. No matter how thriving an enterprise, considering the future is always prudent.

We have worked closely with numerous firms and individuals that have an inherently risk-averse culture; engineers, accountants and lawyers by way of example. Often in these professions such caution is a good thing. When trying to move past the problems of today however, a new approach is needed. Firms cannot rely on traditional problem solving techniques to lead them to a different path. Creating an environment where experimentation and iteration exists is key, the Sprint process allows us to fail and learn in order to move forward and this is part of the mindset we ultimately try and encourage.

The biggest risk, in our view, with completing a program such as the DLI Sprint is that upon completion participants return to business as usual. Participants may need support to complete experiments and the authority to challenge the existing paradigm; otherwise the organisation will never move past the problems of today. If an organisation is willing to train and develop their people then by definition they should also want them to put their new skills into action. Our insistence that we work on real world problems with our partners is intentional. Not only does this increase the level of engagement and motivation but also exemplifies what the firm could achieve by adhering to a structured innovation methodology. This is another reason we insist on participation by senior members of the organisation, it is their support and endorsement that will likely contribute to implementation and change.

Upon completion of our program we aimed to show our partner organisation the value of design, demonstrated by following a methodical, and repeatable approach to innovation. As a result of our work our partner organisation has; created new roles within organisations; promoted individuals we have worked closely with; and employed people they may not have previously considered hiring before they started working with us. They see the value in having different perspectives at the table and a trans-disciplinary approach to problem solving.

Summary

We have now delivered and refined the methodology to a point where we are beginning to observe consistently positive outcomes. The sprint format is design-centric in its foundations. It exposes organisations to DLI and new ways of thinking and working in a structured, productive, and efficient way.

We developed and delivered the DLI Sprint to address problems quickly and efficiently within our partner firm. The success of the program is testament to the efficacy of the approach and also to an appetite for this type of engagement between academia and industry. As a result of the DLI Sprint we generated value by providing facilitation and a structured approach for attendees to work towards a different and improved future. The ultimate cultural and organisational changes will require monitoring and longitudinal study. The Sprint format was designed to be part of a larger body of work, since completing this initial work with the organisation's silos we are now synthesising the results and incorporating it into a program for the organisations executive committee. This next phase of work, currently under development, will include a strategy focus and will push senior leaders to consider different ways of thinking and working whilst setting them on a course to their preferred future.

Short DLI formats and design driven methodologies undeniably provide exciting opportunities to explore design theory in a range of contexts. We have presented a short format of a method and demonstrated it was effective in meeting its objectives. The aim was to provide an introduction to DLI and explore an alternative future. We found that participants of our program received capability and awareness, as shown in Table 7. Our partner organisation has indicated an appetite to continue our collaboration, which speaks to the benefit of this practical and rapid approach.

The value to academia in collaborating with industry is immense, and the value is not confined to within the university but is ultimately shared with the broader community. Effective collaboration, in this sense, is a powerful combination that couples the most advanced thinking with a quality industry partner, and is a promising recipe for advancement that serves both parties needs.

The DLI Sprint is not designed to be a one off intervention; instead it should lead to long-term impact through a long-term collaboration. Embedding design inside an organisation requires considerable effort and takes more than a short interaction. Design integration requires firms to

take a long-term view; the sprint method delivers value in the short term by providing organisations with rapid gains, exposure to DLI and assisting in managing the risks of implementation. Importantly this approach allows us to explore the finer details of design research, which is often missed, presenting exciting opportunities for the future.

References

- Baghai, M., Coley, S., & White, D. (2000). *The Alchemy of Growth: Practical Insights for Building the Enduring Enterprise*. USA, McKinsey & Company, Inc.
- Brown, T. (2009). *Change By Design: How design thinking transforms Organisations and inspires innovation*. New York, NY: Harper Business.
- Brunswicker, S., Wrigley, C., & Bucolo, S. (2013). Business Model Experimentation: What is the Role of Design-Led Prototyping in Developing Novel Business Models?. In *The Experimental Nature of New Venture Creation* (pp. 139-151). Springer International Publishing.
- Bucolo, S. (2016). *Are We There Yet? Insights on How to Lead by Design*. Sydney: BIS
- Dattner, Z. (2016). Australia's got talent – or at least it could if we set our minds to it. *SmartCompany*. Retrieved 14 April, 2016, from <http://www.smartcompany.com.au/business-advice/innovation/66069-australias-got-talent-or-at-least-it-could-if-we-set-our-minds-to-it/>
- Dorst, K. (2015). *Frame Innovation: Create New Thinking By Design*. Massachusetts, USA: The MIT Press.
- Jones, P. (2013). *Design For Care: Innovating Healthcare Experience*. Brooklyn, NY: Rosenfeld Media.
- Knapp, J., Zeratsky, J., Kowitz, B. (2016). *Sprint, How to Solve Big Problems and Test New Ideas in Just Five Days*. New York: Simon and Schuster.
- Liedtka, J., & Ogilvie, T. (2011). *Designing for Growth: a design thinking tool kit for managers*. New York, NY: Columbia University Press.
- Manzini, E. (2015). *Design When Everybody Designs: An Introduction to Design to Social Innovation*. Massachusetts, USA: The MIT Press.
- Martin, R. (2009). *The Design of Business, Why Design Thinking is the next competitive advantage*. Boston, Massachusetts: Harvard Business Review Press.

- Developing a Design Led Innovation Sprint: A Case Study within a Global Engineering Firm*
- O'Reilly, C.A. III, & Tushman, M. L. (2004). The Ambidextrous Organisation. *Harvard Business Review*, Apr:82(4), 74-81, 140.
- Paton, B., & Dorst, K. (2007). Briefing and Reframing: A situated practice. *Design Studies*, 32(6), 573-587. doi: 10.1016/j.destud.2011.07.002
- Price, R., Wrigley, C., & Straker, K. (2015). Not just what they want, but why they want it: Traditional market research to deep customer insights. *Qualitative Market Research: An International Journal*, 18(2), 230-248.
- Thurgood, C., Dorst, K., Bucolo, S., van der Bijl-Brouwer, M., Vermaas, P. (2015). Design Innovation for Societal and Business Change: International Conference On Engineering Design, ICED 15 27-30 July 2015, Politecnico Di Milano, Italy.
- Verganti, R. (2009). *Design-Driven Innovation: Changing the Rules of Competition by Radically Innovating What Things Mean*. Boston, Massachusetts: Harvard Business Review Press.