

Exploring the opportunities between Design Thinking and micro-enterprises in regional Ireland

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Abstract

This thesis follows Irish Design 2015 (ID2015), a year-long Government backed initiative and key component of the Action Plan for Jobs (APJ) 2015-2017. The aim of ID2015 was to grow awareness of Irish Design in order to support job creation, foreign trading and the increased competitiveness of Irish businesses (ID2015, 2016). Building on ID2015, Mary Mitchell O'Connor asserts that Design must become a key component in Ireland's innovation agenda (2017). Design is now firmly associated with strategic management and innovation processes globally (Lawlor et al. 2015). Design Thinking (DT) emerged from these broader applications of Design, and is now identified as a co-creative strategic activity (Lindberg et al. 2010). While Design and DT are widespread among large organisations, awareness in smaller businesses is far less developed. 69% of Irish businesses never use Design, or use it only at a superficial level (Hennessy and Milton, 2017). Additionally, previous research on the relationship between Design and the wider-enterprise base in Ireland has made it difficult to see how it applies and relates to micro-enterprises. This research aims to develop a grounded theory on the relationship between DT and micro-enterprises in regional Ireland. It explores how DT offers strategic value to these businesses, by supporting understanding of the purpose and identity of the business for the owner.

A qualitative research approach within five diverse micro-enterprises in an Irish town located in the South-East (SE) was undertaken to gain an empathetic understanding of their culture, difficulties and alignments with Design and DT. Categories generated in the pilot study, facilitate the collection and synthesis of all field studies. Further restructuring of these categories enables the identification of the core category and sub-categories of this study, which are illustrated in the final framework of business analysis. This framework is validated through comparative analysis with Doblin's ten types of Innovation framework (Monitor Deloitte, 2014).

The validated framework directs the research to the development of two distinct but directly related Design interventions. Firstly, the method "Ecology Mapping" is created and encompasses a series of collaborative workshops where DT is practiced to empower the business owner in articulating their purpose and identity. Secondly, building on findings from the "Ecology Mapping" a strategy framework is developed. The intention of the strategy framework is to facilitate the owner in adopting and sustaining a Design-led approach to their business.

Findings highlight that micro-enterprise owners have difficulties in articulating their purpose and identity, which is reflected throughout the business. This study indicates that DT can be a powerful instigator in re-invigorating the purpose and understanding of a micro-enterprise identity through the proposed "Ecology Mapping", which can enable the desire to adopt a Design-led approach. Additionally, research highlights that adopting a Design-led approach directly compliments the challenges facing micro-enterprise owners on a day-to-day basis, who despite being highly skilled and knowledgeable in their area of expertise, lack management, innovation and marketing skills. Therefore, this research asserts that the potential for Design and DT in the micro-enterprise is great, and engaging with Design at a strategic level from the outset can offer novel and broader value creation. However, many obstacles are faced in sustaining Design and DT among these businesses.

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List of Acronyms

AOC	Agent of Change
APJ	Action Plan for Jobs
APJ-SE 2015-2017	Action Plan for Jobs - South East Region, 2015-2017
BIC	Business Innovation Centre
BTWEA	Back To Work Enterprise Allowance
CSO	Central Statistics Office
DCCoI	Design and Craft Council of Ireland
DJEI	Department of Jobs, Enterprise and Innovation
DMI	Design Management Institute
DT	Design Thinking
EC	European Commission
EI	Enterprise Ireland
EU	European Union
GDP	Gross Domestic Product
GEDI	Global Entrepreneurship Development Index
GEM	Global Entrepreneurship Monitor
HBR	Harvard Business Review
IBEC	Irish Business and Employers' Confederation
ICT	Information and Communications Technology
IDA	Industry Development Authority
ID2015	Irish Design 2015
IMI	Irish Management Institute
KPI	Key Performance Indicators
LEOs	Local Enterprise Offices
MNC	Multi National Corporation
NACEC	National Association of Community Enterprise Centres
NEXTD	Next Design Leadership Network
NWRA	North Western Regional Assembly
OECD	Organisation for Economic Co-operation and Development
RD&I	Research, Development & Innovation
ROI	Return on Investment
R&D	Research and Development
SE	South East
SFA	Small Firms Association
SME	Small and Medium sized Enterprise
S&P500	Standard & Poor's 500
UX	User Experience

Chapter 1: Introduction

The application of Design and Design Thinking (DT) is now widespread among the most successful innovators and organisations worldwide. The Design Management Institute (DMI, 2015) demonstrates the recent value and scope of Design, by comparing sixteen Design-centric companies against the Standard & Poor's 500 (S&P 500) (Fig.1).

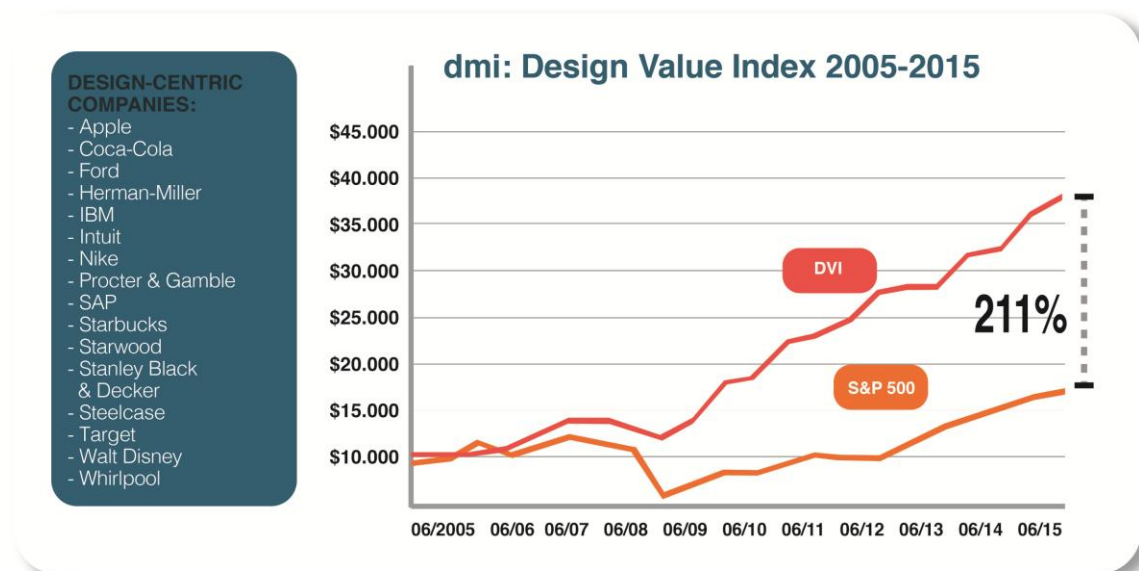


Fig. 1 The Design Value Index (DMI, 2016) - [Self-Generated Image]

Although pervasive among large organisations, there remains a low awareness and practice of Design and DT in smaller businesses. In Ireland, previous research on the relationship between Design and smaller businesses has focused on highly innovative and successful businesses that are already accustomed to Design and have ten or more employees (Lawlor et al. 2015; Hennessey and Milton, 2017). The result of these case-studies has been personal stories of how Design creates value for each business, making it difficult to understand how Design and DT is applied and relates to other businesses particularly micro-enterprises who are not Design competent.

"There is a real opportunity for Ireland's SMEs and policy makers to now learn from and build upon the success of others by making Design central to business and innovation strategies"

(Lawlor et al. 2015, p.11)

This thesis aims to contribute to both the academic field of Design and wider-enterprise base in Ireland, in regards to DT and micro-enterprises who are not accustomed to Design. The thesis is divided into six Chapters. Chapter One highlights the need for this research and provides a breakdown of the structure of the thesis.

Chapter Two discusses the literature review. The intention of the literature review is to develop an understanding of DT and its relationship with the wider-enterprise base in Ireland. Given that DT still lacks a shared understanding (Buchanan, 2015), this review features an investigation into DT from a mixture of academic and industry Design resources, including papers, reports, books, journals and internet sources such as websites, blogs, forums and linked-in™ groups. This diverse mixture of sources enables the development of a clear articulation of DT, which is further validated by comparison with management fundamentals including innovation, strategy and culture. The review then focuses on SMEs and their owners in Ireland. An investigation of academic studies, industry publications and policy documents demonstrates the challenges and deficiencies of small business owners and highlights strong opportunities for Design and DT. Additionally an overview of the industry environment in SE Ireland is given and this highlights promising alignments with DT. The final section explores how DT can be embedded within smaller businesses, based on knowledge gained from recent policy papers on Design in Ireland and industry experts. The review concludes by generating four questions that direct field research.

Chapter Three describes the research approach undertaken throughout. Questions developed from the literature review direct field research to a mixed method approach. Field research intends to develop an interpretive understanding of the culture and difficulties of micro-enterprises and explore how Design and DT can offer value and be integrated within them through critical theory. Data collection is tailored to a qualitative research in five diverse micro-enterprises in a town in the SE region of Ireland. The methodological strategy of grounded theory combined with Design methods enable the analysis and synthesis of qualitative data from these case-studies to build theory that is context relevant.

Chapter Four demonstrates the process of data collection, analysis and synthesis from case-studies. This is achieved by illustrating the development of categories and documents from the pilot study which facilitate the collection and syntheses of all case-studies. Further structuring of these categories and a comparative analysis with Doblin's ten types of Innovation framework (Monitor Deloitte, 2014) enables the development of the final framework of business analysis. This framework encapsulates a micro-enterprise in regards to the difficulties they face and where Design and DT can offer value. The chapter concludes by answering the questions that directed field research.

Chapter Five describes the development of two Design interventions that stem from the final framework of business analysis. Firstly the method 'Ecology Mapping' is developed. This includes a series of workshops where DT enables the owner of a real business to articulate their businesses identity and purpose. Building on these findings, a strategy framework is developed to facilitate a micro-enterprise in adopting Design-led innovation throughout their practise based on findings from field research. Additionally the broader structural context of industry and innovation endeavours in Ireland and how DT and Design can be integrated and add value are investigated.

Chapter 6 summaries the thesis and discusses the conclusions developed throughout. Further recommendations for sustaining DT within micro-enterprises are explored and opportunities for future research in this area are highlighted.

Chapter 2: Literature Review

The aim of the literature review is to demonstrate a developed understanding of DT and its relationship with the wider-enterprise base in Ireland. The review is broken into four main sections. Firstly, the universal nature and recent emergence of Design are explored. Factors discussed here lead to an understanding of the current popularity of Design and the increased need to define the term DT. The next section explores the concept of DT. Triangulating academic, business and strategic Design practice sources enables a context relevant understanding of DT, which is further validated by discussing its parallels with management, innovation and strategy. The result is a strong validation and understanding of DT. The third section investigates industry in Ireland and quickly focuses on smaller businesses, their owners and their relationship with DT. In line with the scope of the study which is focused towards smaller businesses the section concludes by discussing industry initiatives in the SE of Ireland. The final section explores how DT and Design can be applied to smaller businesses. Findings from each section are summarised in the conclusion and questions are developed which provide direction for field research.

2.1.1 What is Design?

"Design is one of the basic characteristics of what it is to be human, and an essential determinant of the quality of human life. It affects everyone in every detail of every aspect of what they do throughout each day"

(Heskett, 2005, p.2)

Design is increasingly recognised as an activity that is universally applicable (Heskett, 2005; Nelson and Stolterman, 2003). Archer was pioneering in distinguishing Design from other academic disciplines including the natural sciences and humanities (1979). He noted that the distinguishing characteristics of Design are the reasoning (abductive) and language (modelling) of Design (Archer, 1979). Oxford Dictionaries define reasoning as "the action of thinking about something in a logical, sensible way" (2017). Language in the broadest understanding denotes how ideas are communicated both verbally and non-verbally.

Traditional academic disciplines of the humanities and the natural sciences predominantly use deductive reasoning to extract precise conclusions from the analysis of facts, and inductive reasoning to derive likely conclusions from a fixed scope of incomplete data. Design operates through abductive reasoning, the "nonlogic" of what could be (Neumeier, 2012, p.149). Abductive reasoning refers to the ability to envisage and integrate something new from observation and incomplete data. Design differs itself from traditional academic disciplines by actively envisaging and integrating new ideas and is ambiguous due to its ill-defined and future thinking nature.

The ambiguous nature of Design is directly complimented by the language of Design which is called modelling (Archer, 1979; Cross, 2005). Modelling is comparable to the language of humanities, natural language, and the language of science, notation. Modelling refers to the infinite number of tangible and intangible tools that Designer's use to represent ideas. A collection of these modelling tools is found in Fig.2. This collection is compiled from sources reviewed throughout research and has the intention to develop the understanding of Design and DT for the reader and author. The process undertaken in the development of this collection can be found in Appendix A.

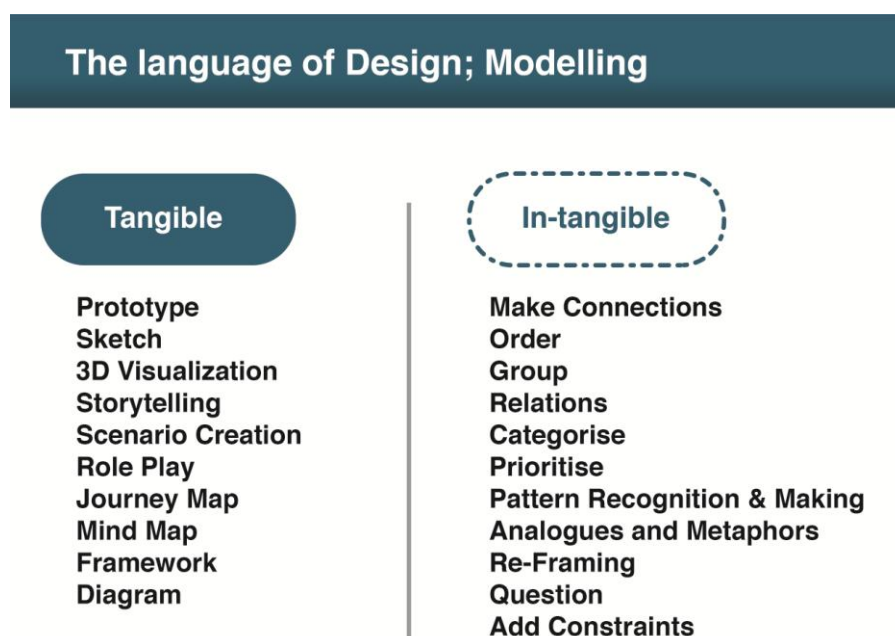


Fig. 2 Design Modelling - [Self-Generated Content and Image]

The iterative construction of these models which stimulate intuition, emotion, and feedback (Boland and Collopy, 2008, p.16) highlights how Design tackles ambiguity as it focuses towards the envisaged goal while simultaneously building understanding of the current situation. While the defining practices of Design in imagining something new and creating iterative models to achieve and integrate it are mainly associated with expert Designers. Nelson and Stolterman, highlight that even in a mundane task, these practices are at the core of human activity in general (2003, p.1).

2.1.2 The Emergence of Design

Design has now emerged to the forefront of culture and industry. A timeline was developed through the process of the literature review that intends to illustrate the emergence and relevance of Design and DT. This timeline titled - The development of Industrial Design - from product development to strategic driver, can be found in Appendix B1 and B2. The timeline consists of different sections that illustrate the evolution of Design and DT. A summary of selected sections provides the basis for exploring the emergence of Design.

- Design Policy, Support Programmes & Promotion

Sir George Cox states that Design is now seen as the link between technology, creativity and the user, as an essential strategic approach to increase the scope of innovation (2005, p.2). The vision of the EC (European Commission) is that by 2020 Design should be a well-integrated element of innovation policy across Europe (Droll, 2011). In Europe, Design was integrated as a policy priority for the first time as one of the seven components of Innovation Union (2010). The European Design Innovation Initiative was launched in 2011 and the first European Design Action Plan; The *Action Plan for Design-Driven Innovation* was introduced in 2013 (EC, 2013).

- Design Success in Industry

“Design may be as important to corporate management today as Six Sigma was in the '90s” (Nussbaum and Tiplady, 2005). Design firms are now rivalling management consultancies.

Software, financial and social media corporations are acquiring Design firms at a fast rate. Many MNC's (Multi-National Corporations) are making DT a central tenet of their innovation and organisational system. It has powered new companies like Nest and Airbnb and revitalised older ones like Google, IBM and Intuit. IBM invested in their Design culture in 2012, including hiring 1000 UX (User-Experience) Designers (Handa and Vashisht, 2017).

- Design Thinking in Education

DT is now present in the most prestigious business schools. Harvard Business School emphasise DT as a big focus area for leadership in the future (2016). It has also become foundational in engineering schools (Leifer and Meinel, 2015). In the past five years DT has become popular in both primary and secondary education globally, both as programmes and as part of the core curriculum.

The establishment of Design and DT in policy and education, combined with the widespread application and success of Design and DT in large organisations, highlights how Design is now at the forefront of our culture. As discussed previously, Design's abilities to tackle ambiguity makes it distinctive. As the modern environment becomes increasingly complex, social and digital. The need to build shared understandings and improve communication only increases (Nelson and Stolterman, 2003), which reflects the sustained growth and broadening scope of Design.

2.1.3 The Emergence of Design Thinking

"We are on the cusp of a Design revolution in business. As a result, business people don't just need to understand Designers better - they need to become Designers"

(Martin, 2004 in Martin and Christensen, 2013)

The increased use of Design has accumulated in organisations of all types attempting to understand and democratise Design activity and most notably fuelled the recent popularity of DT. (Johansson-Skoldberg et al. 2013). It has been discussed that DT is now widespread among large organisations and growing within education. The concept continues to receive

increasing attention (HBR, 2016). However, the contrasting use of DT in both the Design and management discourse, has created conflict and negativity surrounding the term.

Nussbaum and Norman renounced the concept in 2011, questioning the intentions of Design agencies that promote it and growing increasingly impatient by its shallow practice and portrayal within business. "DT has become vague and controversial in current discussion" (Buchanan, 2015, p.12). In the business world it is viewed as a panacea, while in Design, practitioners are still building their understanding of the term. Consequently, clarity has now become the next DT competitive advantage (Van Patter, 2015 c).

2.2 Design Thinking (DT)

This section develops a clear articulation of DT. This is achieved by exploring the history of theory of Design cognition and DT in the academic Design discourse and management discourse. This exploration is then compared with knowledge sourced from strategic Design practice. Triangulating these sources directs the chapter to a clear and relevant understanding of DT in the organisational context, which is validated by discussing its alignment with management fundamentals including innovation, culture and strategy.

2.2.1 Historical Overview of Design Thinking (DT)

It is widely accepted that there are two distinct discourses in DT; the academic Design discourse and the management discourse. Johansson and Woodilla (2013) state that Design academia consider DT to have emerged in the nineteen sixties, while the concept is a recent phenomenon in the management discourse. The comprehensive study on DT by Johansson and Woodilla (2013) who further categorise the Design and management discourse, assert that there is no unique meaning to DT and that the multiple interpretations of the activity is a sign of maturity.

Academic Discourse

Theory on Design cognition is predominantly traced back to Herbert Simon. Simon, proposed Design to be a rational, linear, problem solving process (1969). Although Simon proves foundational in developing links between Design and management to this day. His rational approach is often disregarded as it neglects the intuition of the problem solver and social nature of Design (Buchanan, 1992, p.9). Rittel countered Simon's rational model of Design, by introducing the concept of 'wicked problems' (1972). 'Wicked problems' acknowledged the social and indeterminate nature of Design problems. These problems are not able to be defined or solved definitively. Rittel's perspective creates a more participative and argumentative notion of Design activity.

Schön further distances Design from problem solving, focusing instead on problem setting and framing (1983). Schön asserts core elements of Design practice as intuition, the iterative actions between thinking and doing and the framing and re-framing of problem setting throughout (Johansson-Skoldberg et al. 2013). Reflective of Rittel and Schön, Cross states that Design demands substantial activity in problem structuring and formulating (2001). Building on these perspectives Lindberg, et al. (2010 b) illustrate the practice of Design (Fig.3). This illustration describes how Designers tackle ambiguity and 'wicked problems'. In the problem space, diverse perspectives are sought and Designers rely on intuition and best fit to further direction, while in the solution space many ideas are explored, wild ideas are encouraged and judgement is deferred. These spaces are aligned throughout by the iterative generation and testing of models (Page 5).

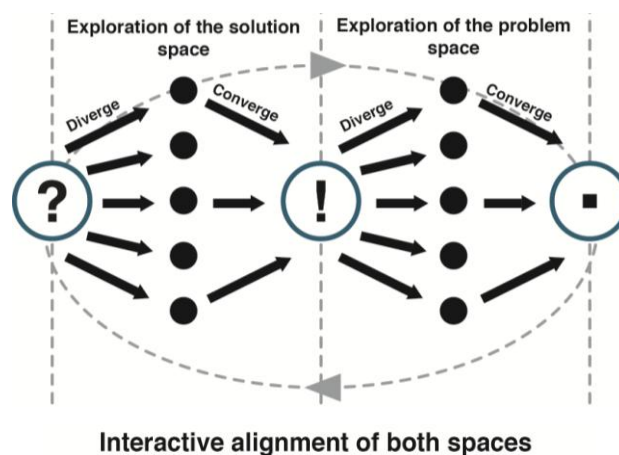


Fig.3 Design Practice (Lindberg et al. 2010 b) - [Self-Generated Image]

These strategies, combined with methods and principles, were reinterpreted as guidelines for the adoption of Design outside of traditional Design disciplines (Lindberg et al. 2010 a, p.33). In these contexts, Design was established as a creative problem solving process and eventually these interpretations formed the basis for misrepresented DT process models (Fig. 4&5).

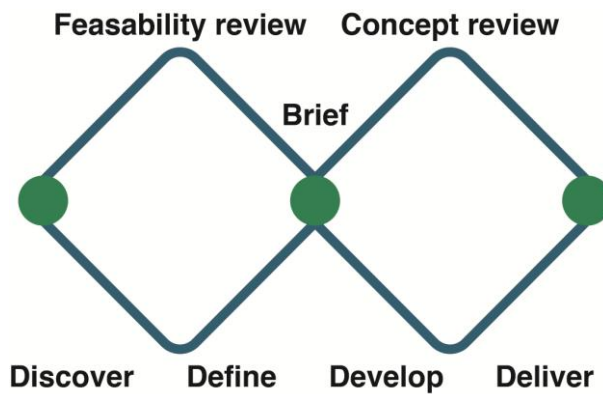


Fig. 4 Design Council, Double Diamond (2004) - [Self-Generated Image]



Fig. 5 Design Thinking - Stanford Bootcamp Bootleg (2010) - [Self-Generated Image]

Lindberg et al. (2010 a) suggest that DT is not a process anyway, but rather it shapes processes. They propose eight working modes (not sequential) that recur in all observed DT activity.

- (Re)Framing the Design Problem
- Grasping External Knowledge
- Knowledge Pooling
- Synthesizing
- Path Selecting
- Ideating
- Concept Specifying
- Making it tangible

(Lindberg et al. 2010 a)

In 1992, Buchanan aligned Rittel's concept of 'wicked problems' with Design. Through the construction of his four orders of Design framework (Fig. 6) Buchanan demonstrates the evolution of Design in context and level of complexity, asserting that in the areas of high complexity, where DT operates, all problems are wicked and hence indefinable. Consequently, Buchanan states that the distinctions between DT and the activity of making are critical in future clarity of DT. Lindberg et al. (2010 b) offer this clarity by discussing DT's evolution into a meta-disciplinary and integrative concept. They believe that the explorative, integrative and holistic nature of DT, counters the restrictions of traditional, analytical and mono-disciplinary thinking. They assert DT to be collaborative in both problem and solution space, until a problem is precisely enough defined and expert knowledge can suitably be applied (Lindberg et al. 2010 b, p.35).

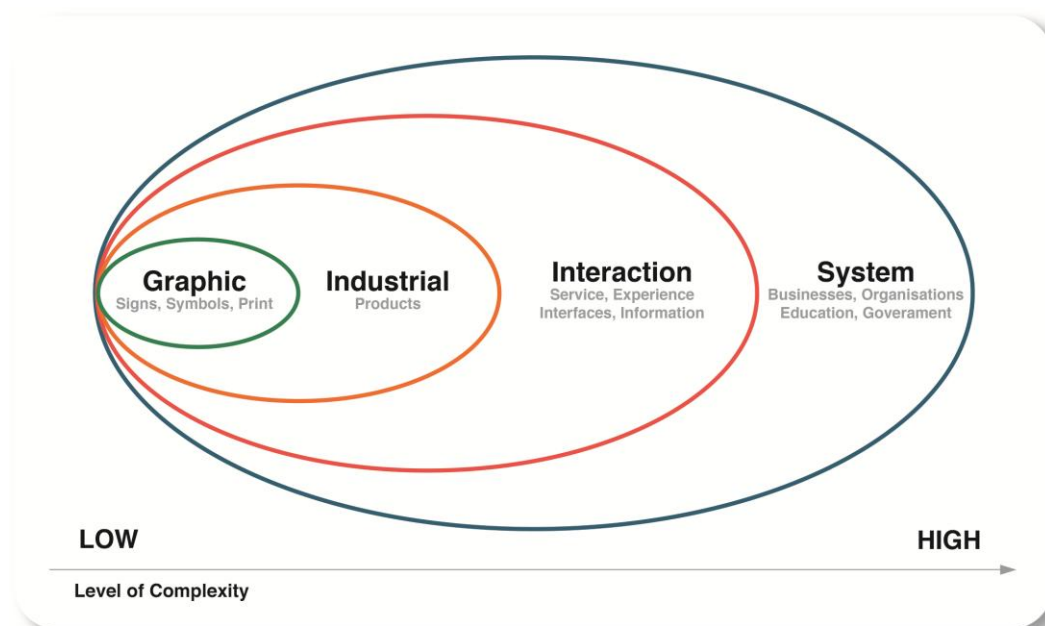


Fig. 6 Adaptation of Buchanan's 4 Orders of Design (1992) by Professor Oliver Szasz - [Self-Generated Image]

Management Discourse

In the management discourse DT has a close relationship with IDEO, the world's largest Design Company with close links to Stanford University. Co-founder of IDEO and ex Prof. at Stanford David Kelley describes the emergence of DT in a conversation with CEO of IDEO Tim Brown in 2003 (Page 12).

"We would stop calling IDEOs approach Design and start calling it Design Thinking. I'm not a words person, but in my life, it's the most powerful moment that words or labelling ever made. Because then it all made sense. Now I'm an expert at methodology rather than a guy who designs a new chair or car"

Kelley in Tischler (2009)

In 2003, IDEO began to market themselves as a Design and innovation company rather than a Design company, but utilising DT as the driver of innovation (Johansson-Skoldberg et al. 2013). IDEO were successful at disseminating knowledge regarding DT as a human-centred innovation tool, particularly targeted at businesses and social innovators (Brown and Wyatt, 2007). Through this success, many suggest the concept has turned into an almost "fashionable notion" (Lindberg et al. 2010 b). Process models and tools offered by IDEO were seen to be over-simplified (Johansson-Skoldberg et al, 2013 p.128).

Prof. Roger Martin, who worked with IDEO was one of the most prominent influencers of popularising DT as a way of approaching management (Dunne and Martin, 2006). Martin declared that the project based work of Design centred on wicked problems, is more appropriate to management than traditional approaches that are centred on ongoing permanent assignments (Martin and Dunne, 2006). Additionally, the creative techniques of Design in abductive reasoning and integrative thinking further compliment the analytical techniques of managers.

Boland and Collopy's study of Architect Frank Gehry (2004) describes a Design attitude that is fundamental and capable of cultural transformation across an organisation. This attitude is discussed through strategies in problem framing, using constraints to energise Design activity, the willingness to adapt and resisting the closure of Design problems. They further highlight the importance of bringing empathy back into the centre of managing, by seeking new ways to achieve human betterment in all areas of experience. Reflective of the Design attitude described by Boland and Collopy (2004) Best highlights the transformational capabilities of DT and suggests it can enable behavioural and cultural change (2011).

2.2.2 Sensemaking to the Fore

Humantific™ is an innovation consultancy based in New York founded by GK VanPatter and Elizabeth Pastor in 2001. Humantific™ use DT, strategic problem solving, and information visualisation to help multi-disciplinary teams and organisations innovate and build cultures (Humantific™, 2015). VanPatter and Pastor also founded the *Next Design Leadership Network* (NextD). NextD is a community sensemaking research project that was active from 2002 - 2014 with the aim of offering clarity to DT. The core theme of NextD's research is that the context in which DT operates has expanded and in this expansion the practice of DT has evolved. Building on Buchanan's four orders of Design (page 11), NextD depict this expansion in the four geographies of Design framework (Fig. 7). The interplay between "sensemaking", "strangemaking" and "changemaking" in this framework illustrates the evolution of Design practice and output.

What design does is changing



Fig. 7 Humantific: What Design does is changing (2015) - [Self-Generated Image]

At Humantific™, making the strange familiar is called "sensemaking" and making the familiar strange is called "strangemaking". While "strangemaking" i.e. how to make one product or

service different from another, is deeply embedded in traditional Design education and all aspects of branding/product creation (Jones and Van Patter, 2009). The new areas where DT operates are more complex and weighted on "sensemaking". There is an increased emphasis on human-centred research, co-creation and an assumption free approach, representing significantly different methods and strategies than framed challenges in traditional Design. Additionally, the output of DT has shifted from "strangemaking" to "changemaking", which acknowledges the now co-creative and transformative characteristics of DT. In these new contexts DT is experimental and encompasses the continuous development of new knowledge.

Van Patter highlights that today "sensemaking" is at the centre of the revolution within DT, innovation and transformation (2015 c). "Sensemaking" has appeared in diverse research areas since the nineteen seventies. "Sensemaking" originated at Xerox PARC, by Russell, and is further present in management science (Snowden), cognitive psychology (Hoffman, Klein, and Moon) and organisational behaviour studies (Weich). While there are differences between these theories (Kolko, 2015), the importance of mental models and the high dependency on inclusion is consistent throughout. Similar to Weich, Humantific™ see "sensemaking" as a continuous, highly collaborative activity, to understand the present by making complex, ambiguous situations visual, clear and actionable (Van Patter, 2015 c).

2.2.3 Design Thinking in Organisations

Findings from NextD's research corroborates with perspectives of DT found in the academic and management discourse. DT now operates in complex contexts where emphasis is on "sensemaking". In the organisational context DT distances Design from the activity of making and denotes a strategic activity that directs other processes and expert knowledge through the creation of models (Lindberg et al. 2010 b,: Buchanan, 1992). DT does not work in isolation but operates parallel with other processes and expert knowledge. While DT may be practiced on a project-to-project basis, it needs to be culturally embedded to offer most value (Martin, 2013). Design leadership, Design management and skill building are fundamental to the sustained practice of DT in the organisation.

The holistic and integrative nature of DT compliments traditional business thinking and mono-disciplinary work (Lindberg et al. 2010 b). Owen highlights characteristics of DT that make it most effective as an integrator of diverse perspectives, including remaining adaptive, keeping a generalist view and making choice the last resort by exploring all alternatives (2007, p.24-25). DT aims to diverge while expert knowledge wants to converge, the ability to remain in ambiguity is key to the relevance of DT. These factors are explored in further depth in the conclusion of this thesis by investigating the DT leader based on knowledge gained from the Design phase of this research.

Regardless of the challenge, developing an understanding of the present and possible futures is core to the start of DT (Liedkta, 2013). When a broad general goal is achieved and shared information is collected through primary research methods which are empathetic and engaging, and large quantities of secondary data. During this research a plurality of views and diverse collection of information are sought which prompt constraints and insight.

The ability to externalise information collected is fundamental to DT. As described previously, modelling is the language of Design. The iterative generation of models creates a shared representation of a situation. These shared representations, shape the boundaries, invite participation, influence thinking and behaviour and enable shared understandings and the collaborative generation of new ideas (Kolko, 2015). Through the synthesis of information challenges are framed. DT aims to make connections between many challenges, creating holistic and broader value creation throughout the organisation (Van Patter, 2016). When challenges are appropriately framed, focused processes demanding expert knowledge will ensue; subsets of DT.

2.2.4 Parallels between Design Thinking and Management

The evolution of Design management is illustrated in Table 1 (De Mozota and Kim, 2009). Although Design management has been present since the nineteen forties, it was predominantly tactical and focused on the management of technical skill. Today there has been a cultural reform in Design management (Buchanan, 2015). It now advocates Design throughout the organisation, influencing process, strategy and organisational culture

Historical Development of Design Management				
Period	Main Perspective	Design Role	Design Management Focus	Cases
1940s to 1950s	Design as function	Product quality	None	AEG, Olivetti
1960s to 1970s	Design as style	Quality communication	Project management	Alessi, Braun
1980s to 1990s	Design as process	Innovation	NPD Innovation management	Philips, Sony
1990s to 2000s	Design as leadership	Creativity strategy	Brand	Apple
2000s to now	Design thinking	New business model	Creative organisation	IDEO

Table. 1 The evolution of Design Management (De Mozota and Kim, 2009) - [Self-Generated Image]

Buchanan states that besides the tools, methods and techniques of Design, its distinguishing characteristic as an approach to management and organisational culture, in which DT is central, is grounded in the quality of experience for all (2015). This supports Johansson and Woodilla who note an epistemological shift within both innovation and strategy – and this shift is towards the central and enduring beliefs of DT (2009, p.1).

Mintzberg (Lawrence, 1999) differs between strategic planning and strategic thinking.

"Strategic planning is the systematic programming of pre-defined strategies of which an action plan is developed. Strategic thinking on the other hand is a synthesising process utilising intuition and creativity whose outcome is an integrated perspective of the enterprise"

(Mintzberg in Lawrence, 1999)

Mintzberg highlights that traditional management tends to undermine strategic thinking, rather than integrate it. Golsby-Smith (2007) and Best (2011) agree that traditional business strategy, is one of the weakest aspects of most organisations as it aims to offer control and certainty. Golsby-Smith states that strategy is not about control and efficiency, it is about discovering alternative possibilities, asserting DT to offer the next horizon in strategy

through the art of argumentation (2007, p.24). This aligns with Lawrence who states that strategic thinking is fundamentally concerned with, and driven by, the continuous shaping and re-shaping of intent (1999). There are many similarities between strategic thinking and DT. Liedkta(2013) discusses six similarities, as both are;

- Synthetic - Capable of integrating and synthesising information
- Abductive - Future focused and inventive
- Hypothesis Driven - Directed by the iterative generation of frames and hypothesis
- Opportunistic - Adaptive and open to change
- Dialectical - Future orientated while simultaneously understanding the present
- Value Driven - Based on value creation and the values of those who create it

(Liedkta, 2013)

Liedkta also highlights the participative nature of DT and benefits it can have for business strategy. These factors suggest DT can provide a dynamic and emergent alternative to traditional strategic thinking and planning.

The capabilities in generating insight from human experience enable the discipline of Design to advance every aspect of the innovation process. Over the years of working with their ten types of Innovation framework, a study by Monitor Deloitte (2014) found that out of the 5000 industries companies measured over a fifteen year period, 96% of all new projects fail to meet or beat targets for Return on Investment (ROI). The study shows that successful innovators focus on multiple innovation steps; six or more, the 2% that did this demonstrated 90% of all cumulative value of all innovation studied (2014). However, Von Stamm believes it can be difficult for many organisations to successfully improve their innovation performance, considering the majority have a culture and strategy that fosters efficiency, incremental changes and a focus on day to day operations (2004, p.11). Neumeier suggests DT as opposed to business thinking is the way to build a nonstop culture of innovation (2012).

Sisney describes it as the culture system, highlighting the importance of being a values based organisation and the need for a simple system that defines, reinforces and defends these values (2014). While Neumeier states that in a complex adaptive system the purpose not only sets the direction, but suggests rules for behaviour and produces communities of

action (2012). 'The Design Economy' Design Council's 2015 report on the value of Design to the UK economy, show that workers with a Design element to their work are 41% more productive than average (2015) , and The Gallup healthways well-being index highlights that the single most important thing that makes workers happy is making progress (2012). Research suggests that the abductive, iterative and collaborative nature of DT can cultivate a culture of innovation and strategic purpose throughout organisations. Reflected in organisations with visions that inspire, and the consistent desire to optimise experience for all.

Summary

The objective of this section is to demonstrate an understanding of DT in the organisational context. Findings from the historical investigation of DT highlight that DT is bound by 'wicked problems' in complex contexts where emphasis is weighted on problem finding and framing ("Sensemaking", Humantific). As both problem and solution remain obscure throughout DT is an iterative activity between both spaces, which constructs desired futures through the creation of models which in turn shapes thinking orientation, behaviour and direction of other processes. These capabilities combined with the sensibilities of the Design expert illustrate how DT integrates diverse perspectives and disciplines.

At an organisational level DT offers most value when culturally embedded. Ideally it is a continuous collaborative activity that aims to understand the surrounding environment, optimise experience and adapt to both internal and external changing factors. Comparing DT with management, strategy, innovation and culture, highlights that the human-centred nature of DT can offer value to all of these business practices. Capabilities in problem finding and framing align DT with business strategy and enable it to advance the innovation process. Additionally, DT offers a more adaptive, explorative and inclusive approach to business strategy and management (Golsby-Smith, 2007; Liedketa, 2013; Martin, 2004, Holloway, 2009). While it is discussed that traditional business approaches face significant difficulties in optimising business practices, research suggests that embedding DT within the culture of the organisation has the ability to tackle these difficulties.

2.3 Industry in Ireland

This section explores Industry in Ireland. A review of business demographics in Ireland leads to the focus of the research being directed to small businesses. The current industry environment for these businesses, the challenges they face and the characteristics of their owners and Irish entrepreneurs is then discussed. The section then reviews the application of Design in Irish SMEs based on recent policy driven documents. It concludes by focusing on the South East (SE) region of Ireland. Here a review of the recent Action Plan for Jobs (APJ) discusses what is being done to promote business, industry and regional development. Factors discussed here show strong alignments with Design and DT and further validate it within Irish Industry.

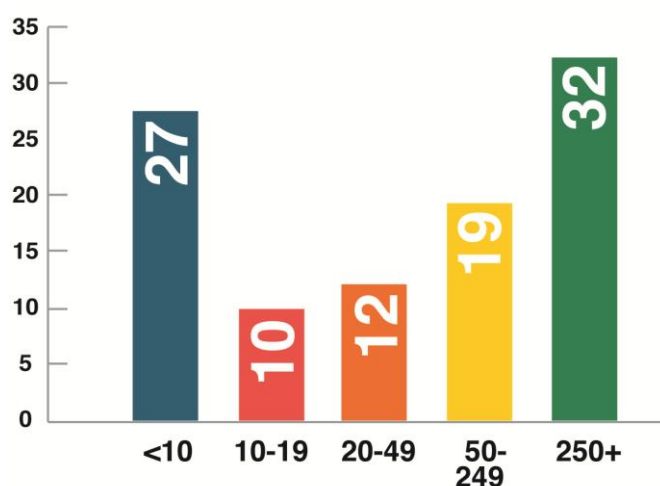
2.3.1 Overview of Industry in Ireland

Ireland is now established as the European hub of operations for many of the world's leading companies and considered one of the leading RD&I (Research, Development & Innovation) locations in the world (IDA, 2015). Fig. 8 is a diagram generated from Enterprise Ireland (EI) content that highlights the popularity of Ireland as a place to conduct business for successful organisations and MNC's (Multi-National Corporations)



Fig. 8 Enterprise Ireland Content (2014) - [Self-Generated Image]

Despite the strong presence of MNC's in Ireland, they are in the minority of overall enterprises. SMEs (Small to Medium sized enterprises) account for 99.7% of all active business enterprises in Ireland. Significantly, over 90% of SMEs in Ireland are classified as micro-enterprises (CSO, 2012). These statistics reflect the situation across the EU (European Union), where 99% of businesses are SMEs, and 92% of these are micro enterprises (EC, 2014). Micro-enterprises are those with less than 10 employees, small enterprises have between 10 and 49 employees , medium enterprises have between 50 and 249 employees and large enterprises have 249 employees and over (Eurostat, 2015). The following graph (Graph. 1) illustrates the importance of micro-enterprises to the Irish economy in terms of employment.



Graph. 1 % of employment by firm size (CSO, 2012) - [Self-Generated Image]

Enterprise Ireland (EI) and Local Enterprise Offices (LEO's) are the two main supports in developing the innovation performance of the Irish enterprise sector. EI offer a wide range of support to companies in all sectors including high potential start-ups, SMEs, large and Irish MNC's. LEOs provide support to micro-enterprises, local businesses and start-ups (LEO, 2017). There are over 80 different Government supports for Irish start-ups and small businesses (Supporting SMEs, 2015). In 2014 the Government launched the Supporting SMEs Online Tool, that aimed to help Irish start-ups and small businesses navigate the range of supports that they could be eligible for. Further support for entrepreneurial activity is found in The National Association of Community Enterprise Centres (NACEC) formed in 2008, comprised of 120 community enterprise centres nationally, strengthened by regional Business Innovation Centres (BICs) in Dublin, Cork, Galway and the South East (Waterford).

2.3.2 SMEs in Ireland

In 2014, An Taoiseach (Irish Prime Minister), Enda Kenny stated that the ambition of the government is that Ireland will be among the most entrepreneurial nations in the world and acknowledged as a world class environment in which to start and grow a business. However, the Small Firms Association (SFA) highlight that the mood amongst the small business community at the start of 2017 is cautious, with 50% of owner-managers feeling that the business environment is improving, down from 77% one year ago. Patricia Callan, SFA Director, emphasises that the optimism from the beginning of 2016 has shifted due to emerging wage demands, Brexit and other financial factors (2017). Furthermore, Irish Business and Employers' Confederation's (IBEC) Aiden Sweeney states there is unnecessary regulatory and administrative costs to conducting business in Ireland (2015).

The Industrial Development Agency (IDA) highlight that foreign firms are responsible for almost three-quarters of Research and Development (R&D) spending (Kelpie, 2015), but only 28% of their indigenous client companies conduct any form of R&D. Additionally, the SFA conclude that small firms are far less likely to take up supports for R&D. The neglect of R&D activities aligns with the resistance of many small businesses in expanding and exporting. A report by Forfas (2014) found that Irish-owned companies accounted for just 9.2% of total exports. While The SFA survey highlights that 32% of small businesses see domestic economic growth as their biggest opportunity for their business in 2017. Dr Catherine Mann, chief economist from The Organisation for Economic Co-operation and Development (OECD) explains that "Foreign owned enterprises are far more productive than Irish owned enterprises," and that this trend continues to move in the wrong direction (2015). The European Commission (EC) asserts that more is required to help educate and change the mind-set of Irish companies so as to encourage them to internationalise their horizons, ambitions and client base (2016).

The *Innobarometer* is the EC's annual survey of activities and attitudes related to innovation (EC, 2017). The 2015 Innobarometer denotes deficiencies of Irish companies in regard to marketing and selling themselves. Table 2 (Page 23) highlights that 53% of Irish companies

find a lack of marketing expertise as the major problem in the commercialisation of their company's goods or services, which is the highest by a large margin, with the exception of Poland and Latvia. The marketing difficulties of Irish businesses are also visible in a survey by Virgin Media Business Ireland (2016), who found that while 62% of Irish SMEs are using social media for their business, 40% reported feel they achieve 0% business growth as a result of their efforts (Murphy, 2016). Research suggests that SMEs have difficulties in communicating effectively with their customers both from a company and personal perspective.
































	Lack of human resources		Lack of marketing expertise			Weak distribution channels		Finding or using new technologies	Difficulties in maintaining intellectual property rights	
	FL415	FL415	Diff. FL415 FL394	FL415	Diff. FL415 FL394	FL415	FL415	FL415	FL415	Diff. FL415 FL394
 EU28	32%	26%	-7	22%	-5	21%	11%	-3		
 BE	29%	23%	-5	10%	-13	24%	8%	=		
 BG	44%	33%	-2	26%	+1	20%	19%	-8		
 CZ	35%	16%	-8	14%	-16	13%	6%	-10		
 DK	34%	18%	-5	12%	+4	13%	5%	+1		
 DE	40%	21%	-2	24%	+1	17%	10%	-2		
 EE	37%	20%	-5	26%	=	10%	5%	+2		
 IE	33%	53%	+18	14%	+1	19%	8%	=		
 EL	37%	39%	=	30%	-15	26%	12%	+2		
 ES	19%	26%	-14	16%	-19	20%	10%	-5		
 FR	44%	39%	+3	33%	-2	32%	10%	-2		
 HR	23%	24%	-13	26%	-14	17%	12%	+5		
 IT	26%	22%	-24	21%	-16	22%	13%	-12		
 CY	28%	33%	=	37%	+12	33%	20%	+7		
 LV	52%	46%	+13	35%	+9	27%	14%	+5		
 LT	44%	34%	+2	20%	-3	16%	12%	+1		
 LU	44%	30%	+10	27%	+19	31%	19%	+11		
 HU	34%	19%	-3	26%	=	15%	11%	=		
 MT	25%	21%	+8	27%	+14	13%	2%	=		
 NL	10%	21%	-7	14%	-2	14%	5%	=		
 AT	41%	21%	-3	15%	-9	8%	16%	+7		
 PL	40%	52%	+7	47%	+9	39%	19%	+2		
 PT	36%	25%	-17	35%	+1	24%	25%	-8		
 RO	35%	22%	-10	33%	+6	30%	10%	-8		
 SI	29%	18%	-5	21%	+4	22%	13%	+8		
 SK	47%	29%	-8	24%	-3	22%	14%	-1		
 FI	29%	31%	-4	17%	+3	23%	10%	+4		
 SE	36%	14%	-1	14%	+6	16%	5%	-3		
 UK	23%	18%	-6	10%	+1	15%	8%	+1		
 CH	40%	27%	+4	19%	-2	25%	12%	+4		
 US	22%	20%	-11	8%	-10	13%	5%	=		

Table 2. 2015 Innobarometer (1) - [Self-Generated Image]

(1) Innobarometer 2015. Q.5B (page 48) Thinking about the commercialisation of your company's goods or services since January 2012, have any of the following been a major problem, a minor problem or not a problem at all?

2.3.3 SME Owner / Entrepreneur

The Global Entrepreneurship Monitor (GEM) included Ireland in the GEM research cycle for the first time in 2014. The publication, *Entrepreneurship in Ireland 2014* stemmed from this research (Fitzsimons and O’Gorman, 2014). Findings highlight that of the 20,400 individuals who started a new business in 2014, about two thirds are the sole traders and 63.5% do not yet have employees. The research found significant differences between the personal characteristics of new business owners (≤ 3.5 years of business) and established owner managers (≥ 3.5 years). While the majority of both operate in low or non-tech sector’s with 85% and 93% respectfully. New business owners are more innovative in bringing new products and services to their customers (46%) compared to established owner managers (17%). Additionally new business owners (52%) outscore established owner managers in venturing into new markets (32%), and the use of new technologies (defined as technology that is less than 5 years old.) 30% to 13%.

The study by McElherron that looks at marketing strategies in micro-enterprises provides insight into the characteristics of their owners (2013). Citing Kotler (2009), highlights that while small business owners tend to be experts in their area, they lack expertise in marketing, strategic planning and other elements necessary for success. Similarly, the SFA cite a 2010 measure of Irish firms by the Irish Management Institute (IMI), that found Irish small businesses are well below ‘best in class’ when it comes to management, innovation and exporting. These opinions reflect the research by GEM, business owners find it difficult to maintain their innovative nature and adaptation to changing practice. Hogarth-Scott et al (1996), state “the owner has to be the generalist who can see both where the business is going and at the same time look after the operational details.” However, research highlights that on the contrary, the owner in a small business is predominantly a specialist.

2.3.4 SMEs and Design in Ireland

The 2015 Innobarometer highlights that businesses in Ireland are closely comparative to the European Union (EU) average, 36% of businesses do not use Design at all and only 14% using Design strategically. Two Documents stemming from ID2015 aim to build the strategic application of Design in SMEs in Ireland. Design Driven Innovation - Why it matters for SME Competiveness (Lawlor, et al 2015) is a major study on Design in SMEs in Ireland developed to promote awareness and understanding of the benefits of applying Design-driven innovation. The Design & Crafts Council of Ireland (DCCoI) lead the development of Ireland – the Design Island (Hennessey and Milton, 2017). This is a consultation paper towards a National Design Strategy endorsed by the Minister for Jobs, Enterprise and Innovation, Mary Mitchell O'Connor. Design must become a key component in Ireland's innovation agenda (Mary Mitchell O'Connor TD, 2017)

Both publications feature case studies highlighting the impact of Design in successful Design aware Irish SMEs across a diverse range of sectors. Findings from industry experts and interviews are also shared. A strong case for the adoption of Design-led Innovation in Irish SMEs is found in both publications.

"It is time for the Irish SMEs to become more dynamic and innovative across all levels of development. A greater awareness and adoption of a Design-driven innovation approach and Design-Thinking can impact positively on economic growth and job creation in Irish SMEs"

(Lawlor, et al 2015, p16)

However, the biggest obstacle in successfully applying a Design-driven approach in the majority of SMEs is the need to change mind-sets about what it means to apply DT principles to business development and innovation activities (Lawlor, et al 2015).

2.3.5 Industry in the South-East of Ireland

Richard Bruton (Former Minister for Jobs, Enterprise and Innovation) states in the Action Plan for Jobs: South-East Region 2015 - 2017 (APJ-SE, 2015-2017), the region was particularly badly impacted by the 2008 economic downturn, but has improved steadily since (p. 3). The APJ-SE covers the counties of Carlow, Kilkenny, Tipperary, Waterford and Wexford, and features 194 collaborative actions. Key focuses of the plan centre on increasing the number of start-ups, developing the capacity of existing enterprises and building on existing industry strengths and capabilities in the region. The SE region has a strong tradition of skilled labour and a competitive advantage in food and agricultural produce illustrated in Fig. 9 (APJ-SE, 2015, p.9). The region also has a strong reputation for creativity, tourism and heritage. The APJ-SE focuses on the adaption of new technologies, process, skills and means of innovation within these industries.

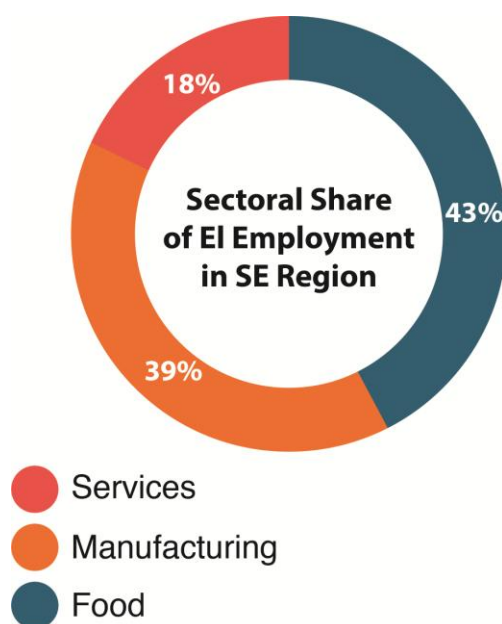


Fig. 9 Sectoral Share of EI Employment in SE Region (APJ-SE 2015-2017) - [Self-Generated Image]

Agri-food targets an 85% increase in exports over the next 10 years, initiatives aim to promote product development and market access, for micro-enterprises in particular. Networking in this sector will be boosted by the development of an artisan food hub, innovation centres and the hosting of an international food tech summit. The Tourism

sector targets 300,000 extra tourists and 5,000 associated jobs by 2025, including developing the South East as a key part of Ireland's Ancient East Experience. Initiatives include the increased use of ICT in the tourism and the hospitality sector and co-ordinating tourism marketing across the counties in the region. The Action Plan focuses on retail in the region by including proposals to enhance the consumer experience and support retailers in expanding and transitioning into e-commerce. (APJ-SE, 2015. p.5-8).

The APJ-SE aims to build the capabilities of existing businesses and increase domestic and international trade by developing their management capabilities, facilitating the adoption of ICT and creating links between businesses (APJ-SE, 2015. p.75). The APJ-SE aims to build on the entrepreneurial capabilities of the region through the development of programmes that facilitate innovation and raising awareness of the range and nature of supports available (APJ-SE, 2015. p.71 - 72). A theme consistent throughout the Action Plan and initiatives is the focus on developing networking, collaboration and knowledge building activities.

"Our objective is to strengthen and leverage existing networks, facilitate cross sectoral dialogue and idea generation around identifying potential growth opportunities... put in place a more systematic engagement between enterprise and the education providers across the region with a focus on identifying current and future demands and trends"

(APJ-SE, 2015. p.41).

The spirit of networking and collaboration is further evident in the plan highlighting the value of Social and Community Enterprises. A social enterprise is an organisation that applies commercial strategies to maximize improvements in human and environmental well-being (Wikipedia, 2017). The plan discusses the value that these enterprises have in developing the economic, social and environmental factors of communities (APJ-SE, 2015. p.90).

Summary

This chapter demonstrates an overview of SMEs, small business owners in Ireland and their relationship with Design. It concludes by exploring the current industry situation in the SE region of Ireland based on the APJ-SE, 2015-2017. A review of industry in Ireland highlights that micro-enterprises are the largest business demographic. While there is a strong wave nationally promoting and empowering entrepreneurship and small business development (APJ, 2015-2017). Small businesses and their owners face significant challenges. These businesses are predominantly solely operated and the mind-set and attitude of the owner that is the most pressing challenge they face, reflected in their deficiencies in marketing, R&D, reluctance to export and inability to sustain motivation and adaption to the changing environment. Additionally, while these owners are highly skilled and experts in their area, they predominantly lack other management and innovation skills (Kotler, 2009; IMI, 2010),. Looking at the use of Design in SMEs highlights that while Design is being promoted nationally as a driver of innovation for SMEs, the changing of attitudes in regards to Design is the biggest challenge in its future success in SMEs. Exploring the current industry situation in the SE region of Ireland, highlights regional initiatives developed to tackle the challenges and improve performance of small businesses. Core themes throughout this plan including improving user experience, facilitating the transition to e-commerce and promoting business management and development, show strong alignments with Design. The emphasis on collaborating, networking and empowering co-creation directly aligns with the understanding of DT built through the thesis.

2.4 Design Thinking (DT) in SMEs

This section looks at how DT can be integrated and sustained in a small business. First, the current practice of Design and DT in SME's is discussed. Findings here validate the investigation of DT in these businesses. A framework sourced from Design Driven Innovation - Why it matters for SME Competiveness (Lawlor, et al 2015) explains how DT can be applied and what value it offers to small business. This validates the understanding and value of DT.

The section concludes by discussing the challenges that are faced in applying Design and DT to small businesses.

2.4.1 Current Practice

Design is widespread among larger companies, however, the majority of SMEs do not use Design (Wolf, 2011). The 2015 Innobarometer highlights that the larger the company, the more likely it is to say Design is central to their business, while companies in primary industries are the most likely to say Design is not used (2015, p.80). The Design ROI project from Alto University Finland (2011) found that SME's do not use Design because it is not needed or relevant to their industry (Association for Finish work, 2012).

Despite many SMEs not using Design, Design can create significant value for SMEs. SMEs, seldom compete with MNC's in mass produced goods, and rather focus on creating specialised products and services for niche markets (Heskett, 2005, p.116-117). Design can be the catalyst in creating new markets and mitigating risk by creating the correct solutions, both achieved by building strong relationships with the customer. However, Hobday et al. explains that in the case of SMEs and micro-entrepreneurial activity, it is more difficult to adopt and manage Design as they are typified by limited capabilities and informal character (2011, p.14). Wolf agrees that SMEs lack Design knowledge, competence and guidance, making implementation difficult even if desired (2011).

Hobday suggests that DT can create a generative, social and flexible organisation that offers a convincing alternative to the traditional view of a business as a rational decision making entity (2011, p.28). In 2008, Wolf highlights that applied research on embedding DT in entrepreneurial activity and micro-enterprises is new. While there have been studies looking at the application of DT in SMEs since, they have focused on successful companies that are already Design competent and resulted in descriptions of Design within the business. Consequently, there remains a poor awareness of DT among smaller businesses, it is difficult for other businesses to see what DT is and how it can be applied to their business.

2.4.2 Embedding Design Thinking in SMEs

The Building Innovation Capability framework stems from the 2015 study of Design-led Innovation in SMEs in Ireland (Lawlor et al. 2015). This framework (Fig. 10) illustrates the requirements needed to sustain DT within an organisation, consisting of four components of process, knowledge and competence, and mind-set guided by the vision and strategy of the business. The first step is to ensure that the firm's strategy is aligned with its customers' needs and expectations, which is complimented directly by DT. Liedkta (2013) reiterates that starting out by developing a better understanding of the current reality is a hallmark of DT, as it looks beyond the immediate boundaries of the problem to ensure the right questions are being asked. By applying DT thing from the outset to understand the vision and strategy of the business. DT can be a transformational tool that enables cultural embedding of Design (Bucolo, 2015).

"DT can play a twin role in innovation capability building;
both improving the innovation capability of the firm and enabling
mind-set and culture change of the staff"
(Lawlor et al. 2015)



Fig. 10 Building Innovation Capability Framework (Lawlor et al. 2015) - [Self-Generated Image]

Significantly, as companies have their own cultures and ways of working, the process of implementation is heavily context-dependent and personal. In the case of smaller

businesses there is increased necessity for good cooperation between the SME owner and designer. Firstly, the leader must actually want to see some change in their organisation which asserts DT to be a top-down approach (Bucolo, 2015). Secondly, the Designer needs to understand the personal motivations and share the same values as the business and owner (Best, 2011).

"The quality of your design leaders is the most important asset you need, trumping any process or framework. Without them, don't even start."
(M. Porcini, 2010)

2.4.3 Challenges

It has been discussed that small business owners predominantly lack management, innovation skills, Design competencies and are slow to adapt to new processes. The changing of attitude and the mind-set of these owners is crucial in the future success and adoption of DT. The previous section explained that DT can enable the cultural and mind-set change of these owners. However, significant challenges are faced in sustaining DT in the business. Bucolo highlights that managers today are ready for the ambiguity of DT, but middle managers are not as they are constrained by specific targets (2015). The conflict between the language of business and Design is also an obstacle. In business, language is descriptive and passive, merely enabling communication. While in Design it is exploratory and constant in communicating, generating ideas and validating direction (Holloway, 2009). These factors are only intensified in smaller businesses who are predominantly solely operated and lack Design knowledge. Consequently, the need for Design support in these contexts is increased, which is not economically sustainable for the vast amount of small business.

Many businesses do not know how to quantify or measure the added value of Design, and without the ability to measure the impact of Design there is no way you can manage it (Turner, 2010). While there are numerous studies highlighting the economic benefit of Design, the Design Value Index (2013) highlights that new measurement tools are needed. Liedkta notes that often first changes that become visible when implementing DT are

aspects such as perception, behavioural change and conversation etc. (2013). Similarly, 'Designing Demand' 2007 – 2012, a national support programme helping UK businesses use *Design*, found that most pronounced ROI may not be apparent until up to 12 to 18 months after programme completion. Consequently, management needs to be persistent and creative in measuring intangible activities before traditional metrics.

Summary

The aim of this section is to explore the possible implementation and embedding of DT in SMEs. There is poor awareness and practice of DT among SMEs. However, DT can provide significant value for these businesses. DT can provide a pivotal role in articulating the vision and strategy of these businesses which provides a basis for cultural and behavioural change, and in turn can improve the innovation and strategic performance through sustained practice and Design support. While significant challenges are faced in embedding DT in smaller enterprises, literature highlights that significant value can be created by further exploration into the application of DT in these enterprises.

2.5 Conclusions

This section summarises the main findings developed through the process of the literature review.

Design Thinking (DT)

- DT is bound by 'wicked problems' where emphasis is on problem finding and framing
- DT is a co-creative, strategic activity that generates models which enable the understanding and framing of these situations
- DT directly compliments multidisciplinary work and the restrictions of analytical thinking

- When culturally embedded within an organisation with sustained Design leadership, DT can enable cultural and behavioural change and improve the innovation and strategic performance of an organisation through a human centred lens

Industry in Ireland

- Micro-enterprises are the bedrock of communities in Ireland
- These business owners face many challenges in operating their business and the mind-set and attitude of these owners is the biggest challenge faced
- There is a strong call and attempt from Industry bodies and the Government to adopt DT among SMEs in Ireland
- The changing of attitudes in regards to Design is the biggest challenge in the future success of Design in SMEs.
- Regional Initiatives and themes found throughout AP-SE 2015-2017 show strong alignments with Design and DT
- DT can add value to all networking, collaboration and knowledge building activities that are promoted throughout the Action Plan.

Embedding Design thinking in SMEs

- The majority of micro-enterprises lack awareness of DT
- The informal cultures and specialist mind-set of micro-enterprise owners makes adoption and management of DT more complex
- There is an increased need for Design support and leadership and many obstacles in implementing and sustaining DT within the smaller businesses
- Research emphasises that DT has great potential for these enterprises
- DT can provide a pivotal role in articulating the vision and strategy of these enterprises which can in turn provide the basis for cultural and behavioural change
- DT can offer a convincing alternative to the traditional business practice, based on its explorative and human-centred nature

Gap in knowledge

Previous studies on the relationship between DT and micro-enterprises, focus on successful enterprise who are already Design competent. These studies provide case-studies that offer thick descriptions and anecdotes of the value of Design and DT in each business. It is difficult to understand how DT can be applied and relates to other enterprises. Findings from the literature review aim to build on the gap of knowledge discovered by exploring the application of DT in micro-enterprises in regional Ireland who are not Design competent.

Purpose Statement

Field research is directed to developing an understanding of micro-enterprises in regional Ireland and exploring the application of Design and DT within them. This will be achieved by a qualitative research methodology in micro-enterprises. This research approach aims to offer a study that accumulates in theory that is actionable in contrast to previous studies of DT and SMEs which are anecdotal. Research questions that will be central to the field research phase are:

- What is the culture of micro-enterprises in regional Ireland?
- What difficulties do they face?
- How can Design offer value to these enterprises?
- How can DT be best integrated within them?

3.0 Research Methodology

This chapter explains the research approach and methodology. Firstly the theoretical perspective and methods that this research are built on are discussed. This leads to the explanation of three research methods including Design research, grounded theory and action research that facilitate the collection and analysis of data. The Design of each phase of the research is discussed. This includes a summary of the research process undertaken throughout the literature review, field research and Design intervention phases of the thesis. The process of selecting participants for research and the sample chosen is also explored. The chapter concludes by discussing the limitations, validity and reliability of the research.

3.1 Research Approach

3.1.1 Theoretical Approach

The literature review found a gap of knowledge in the application of DT in micro-enterprises. Four questions developed in the literature review direct field research. The objective is to gain an understanding of the culture and difficulties of micro-enterprises and explore the potential application of Design and DT within them. A mixed method approach is used to build the study. An interpretivist approach is taken to develop and demonstrate understanding of the culture of micro-enterprises and difficulties they face. Interpretivism relies on inductive reasoning to develop understanding of social life in natural settings and provide an interpretative explanation of it (Neuman, 2014 p.104). Critical theory is used to demonstrate how Design and DT can add value and be integrated with each business. Critical theory uses abductive reasoning to imagine new scenarios and demonstrate their potential to research participants in a specific context.

"Critical social science emphasises the transformative nature of the research and researcher; the primary purpose of research is not simply to study the social world but to change it, by actively challenging interpretations and values"

(Neuman, 2014 p.110 - 111)

The theoretical approaches of interpretivism and critical theory align with the discipline of Design. In Design, interpretation is visible in the focus on understanding humans in context through research and empathy, and communicating insights that are generated from this research. In this study interpretation is evident in data and documents developed from field research case-studies that build understanding of the culture and difficulties of these businesses and their owners.

The transformative and abductive nature of critical theory parallels the future and change orientated nature of Design. As described earlier (Page 5) Design is built on abductive reasoning; the ability to imagine, integrate, and realise new ideas. The change orientated nature of this research is evident in documents that facilitate knowledge transfer for each case-study (Agents of Change), and the co-creative workshops and resulting documents in the method 'Ecology Mapping', that enable cultural change for the research participant.

3.1.2 Methodological Approach

Design, interpretivism and critical theory all rely on a qualitative methodology to build understanding of people and facilitate the generation of new theory. The goal of qualitative research is to discover patterns which emerge after close observation, careful documentation, and thoughtful analysis of the research topic (Maykut and Morehouse 1994 p.20). The purpose of field research is to gain an understanding of how micro-enterprises work on a day-to-day basis and explore where and how Design and DT can offer value. In order to achieve this, qualitative research was undertaken in five micro-enterprises in a town in the SE of Ireland. In these contexts, tools including observations, unstructured interviews, recordings, note taking, sketches and pictures facilitate data collection. Combining Design modelling tools (Page 5) with the methodological strategy of grounded theory facilitates analysis and synthesis of this data and enables the generation of theory, depicted in the final business framework. This framework initiates the development of a Design intervention that consists of an action research project through DT with a business in a real world context.

3.1.3 Design Research

As discussed earlier (page 5) Design has expert abilities in creating models to further understanding. The visualisation of data gathered throughout improved understanding and the structure of the research being undertaken. The creation of three resource books enabled the development of the *Timeline* (Appendix B), the *Design toolset* (Page 5), and an interpretation of DT found in the conclusion of this thesis (Fig. 62 on page.141).

Qualitative data developed in the pilot study was translated to a mind map directly after the visit. Buzan mentions, mind mapping is the easiest way to transfer information into your brain and to take information out of your brain - it's a creative and effective means of note-taking that literally maps out your thoughts (2005). Tony Buzan is closely linked to mind mapping processes since 1974. However, the concept of visual mapping has existed for thousands of years, for example *Mind-Mapping.org* dates the roots of visual mapping back to the 3rd century AD (2017). Illustrating all information on a single page enables the discovery of relationships, distilling of information and understanding of the area. The inclusion of colors and sketches further boosts creativity and imagination (Buzan, 2011).

"In Business, everything is part of a system comprised of stakeholders. The more one can map connections between them, the more opportunities are found" (Frazer, 2007). Further analysis of the mind map enables the generation of the pilot study business map. This map has three intentions. Firstly, iterative drafts enable the further input of information and build understanding of the business and owner. Secondly, it provides a basis of information that enables the collection and synthesis of other case-studies. Finally it is the main AOC (Agent of Change) given to the business owner at the visit after the completion of each case-study. The aim of the AOCs is to improve knowledge transfer in regards to understanding their business, environment and Design and how it can be applied and relates to their business.

"Designers create Human-Centred frameworks so that they can simplify and unify design opportunities in order to conceive of possible futures and make sure all pieces that compose these future are coordinated with one another"

(Coughlan and Prokopoff, 2004)

The business map uses storytelling and different perspectives to develop a holistic understanding of the business on one page. The map is divided into different areas (A breakdown is given on page 56 - 57). The development and analysis of these areas enables the development of the final section of the map which illustrates where Design and DT can add value. The business map enables the participation of other case-studies and generation of the final business framework which facilitates the synthesis of case-studies. Synthesis directs the Design intervention phase of this thesis.

DT and the creation of frameworks to further understanding are core to the Design intervention stage of this research. This intervention consists of a method developed in this research titled '*Ecology Mapping*'. '*Ecology Mapping*' consists of a series of four action research workshops through DT with a real business, with the intention of creating cultural and behavioural change. The iterative generation of single page visuals enable the development of three stages of this intervention. These include 1. planning the '*Ecology Mapping*' process, 2. planning the "*Ecology Mapping*" final visual and 3. generating information before, during and after each workshop. The '*Ecology Mapping*' accumulates in a booklet Designed from information generated throughout the process. The application of DT by the facilitator in the '*Ecology Mapping*', is reflected in thinking big and holistic, being comfortable with ambiguity, being highly visual, storytelling, pattern finding, being empathetic and seeking broader value creation.

3.1.4 Grounded Theory

This thesis follows the methodological strategy of grounded theory to build theory. Grounded theory is suitable due to the lack of existing theory exploring the application of DT in these enterprises. Additionally, while other methodological strategies such as case-studies, phenomenological and ethnographic research require in-depth exploration of a participant with respect to a specific culture, and predominantly result in descriptions of participants and their actions. Grounded theory aims to construct new theory 'grounded' in the data themselves (Charmaz, 2006, p.2) and integrate it with certain contexts.

Grounded theory (Glaser and Strauss, 1967) is a systematic approach to research with specific guidelines for data collection and analysis. It involves using multiple stages of data collection and the refinement and interrelationship of categories to build theory (Strauss and Corbin, 1990). The identification of a "core" category provides the basis for new theory. The "core" category is highly abstract and accounts for most of the variation of data (Corbin and Strauss, 1990 b, p.12- 14). The mind map developed from the pilot study, enables the emergence of categories which further case-studies are transferred to. The integration of these case-studies and re-structuring of categories results in the development of the final business framework. The final business framework identifies the "core" category and sub-categories of this study and is then compared with an industry innovation framework. This comparative analysis validates findings and suggests theoretical saturation. By reaching theoretical saturation, grounded theory states that there is no emerging data within the categories, all categories link to the core category and therefore a theory can be developed.

Regardless of the scale of research, grounded theory demands that broader structural conditions must be analysed. This analysis must be more than just listing or referring to concepts, rather it must highlight the specific linkages and possible integration with emerging theory (Corbin and Strauss, 1990 b, p.11-12). In line with the holistic nature of DT and demands of the research sample, this thesis concludes by recommending how DT can be sustained within micro-enterprises and how it can integrate with and add value to industry and communities in the broader context of Ireland.

3.1.5 Action Research

The '*Ecology Mapping*' is driven by DT. It also has many parallels with the practice and objectives of action research. Action research involves actively participating in a change situation with real-world problems, often via an existing organisation, whilst simultaneously conducting research. Zuber-Skerritt and Perry suggest that there are two action research cycles operating in parallel. One is the focus on the practical problem to be solved. The other is the researcher's engagement with the academic research project and their learning from it (2002). Coghlan (2007 p.300) refers to the latter as 'meta-learning' and emphasises

its role in developing theory. The 'Ecology Mapping' intends to build understanding of the owner and business through the workshops and facilitate them in building their own understanding. It also documents and reflects on the process from an academic point of view by exploring the changing perspective of the owner and whether the application of the project is effective or not throughout.

The 'Ecology Mapping' was conducted in designCORE at The Dargan Research, Development and Innovation centre located at Institute of Technology Carlow. DesignCORE provided the opportunity to interact with a business owner. A business owner came to designCORE with the intention of developing a new product, however, it was clear to the team in designCORE through early discussions that the owner was unsure of what he wanted to do. The owner highlighted that operating the business had been more difficult since their original and core product ceased production in 2014. Consequently, it was explained that the 'Ecology Mapping' could offer value to the business by exploring the businesses environment, personal motivations of the owner and facilitating the owner in articulating a reinvigorated purpose and identity for the business. DesignCORE provided a space that enhanced the application of the 'Ecology Mapping'. A mixture of stakeholders based in designCORE offered a diverse range of expert knowledge that enhanced each workshop.

The "Ecology Mapping" incorporates planning and reflection throughout. In the planning of each workshop, time is spent on refining information and the methodological tools used in workshops, these tools coupled with the creative use of language and color, and inclusive and safe environment made the method more accessible to the business participant.

3.1.6 Data Collection and Analysis

The visual and iterative nature of Design enhanced the capacity to collect, analyse, distil and share data throughout. Field research followed the methodological strategy of grounded theory to build context relevant theory in micro-enterprises. The pilot study consisted of a visit to *business A*. Data collected from the pilot study and further field studies was

qualitative and came in the form of unstructured interviews, pictures, observations, online content analysis, a research journal, sketches, notes and recordings. The outcome of the pilot study was a business map and framework that highlight the different areas of the enterprise where difficulties are faced and Design can offer value. The transfer of other field studies to the templates of this map and framework, enable synthesis of all field research and the development of the core category and sub-categories. Further restructuring of these categories, combined with a comparative analysis with industry knowledge suggest theoretical saturation of field research and the development of the emerging theory, illustrated in the final enterprise framework. The process of data collection, analysis and synthesis and findings from field data will be presented and discussed in Chapter Four.

3.2. Research Design

3.2.1 Literature Review

The original working title "*The development of DT as an industry tool in Ireland*" provided the starting point for this research. Three areas developed from the scoping of this title including DT, Design in the wider-enterprise base and industry in Ireland, offered direction and structure in collecting secondary data for the literature review. Due to the emerging and undefined nature of DT, data came from a wide collection of sources. Through the analysis of these sources, a selection of resources were created with the intention to build an understanding of Design and DT throughout. These resources include:

- 3 X Log books (Fig. 11 on Page 41) - Each book serves similar purpose but differs in content (See Appendix A and B)
 - Book 1 catalogue for early findings and thoughts
 - Book 2 initiate the development of the timeline, collect process models for comparative analysis and building understanding of Design activity
 - Book 3 catalogue of Design methodologies to facilitate research and understanding

- Timeline: The evolution of Industrial Design. This was developed as a way of structuring the literature review, compiling information and growing awareness of the relevance and emergence of Design (See Appendix B1 and B2)
- Design Thinking Process: This includes the cataloguing and comparative analysis of all information on Design/DT processes found in literature. This enables a clearer understanding and a foundation of knowledge to generate a new interpretation of DT (See Appendix A and Fig. 62 on page. 141)

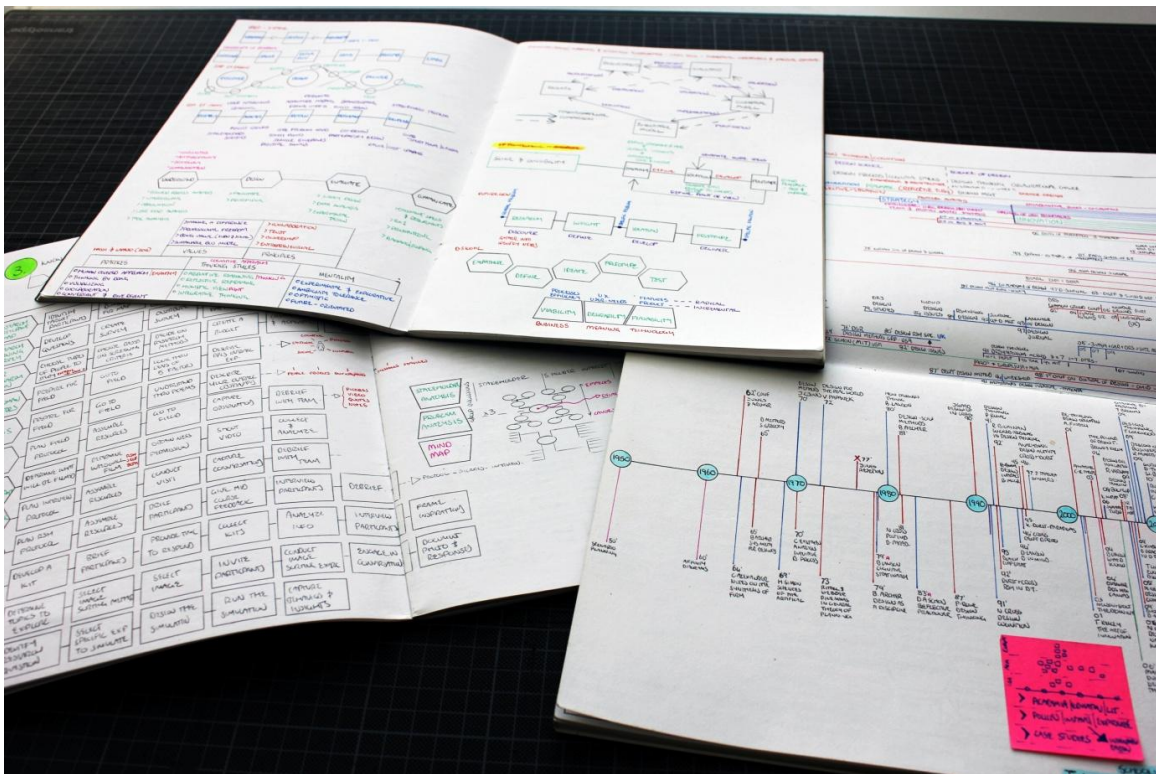


Fig. 11 Three resource books that facilitated research

The increased understanding and articulation of DT was aligned with industry and small business owners in Ireland. This enabled gaps to be identified in research which informed the methodology and direction of field research.

3.2.2 Sample Selection

Conclusions derived from literature indicate that Design can offer value to all industries that have human relations, and that the majority of micro-enterprise do not engage with Design.

The criteria for sampling selection offered a diverse and exploratory scope for the project. It stated that participants must be:

- Located in the chosen county
- A micro-enterprise (1-9 employees)
- Not technologically intensive
- Not Design intensive
- Businesses it was believed to have a real interest in participating
- Businesses that offer visible portals to stakeholders

A combination of theoretical and snowball sampling enabled participation with businesses. Sampling in grounded theory proceeds on theoretical grounds (Corbin and Strauss, 1990 b, p.5). Theoretical sampling is different from conventional methods of sampling in that sample cases are selected with the aim to develop an emerging theory (Neuman, 2014, p.274 - 276). Design and DT can offer value to micro-enterprises and this research aims to capitalise on the lack of existing knowledge in these relationships. Snowball sampling is similar to theoretical sampling in that it is responsive to the data, however, it is not fixed on building new theory. Snowball sampling begins with one case and then, based on information about interrelationships from that case, identifies other cases and repeats the process again and again. (Neuman 2014, p.273).

Focusing the scope of the research in a specific county in SE Ireland aligns with both of these sampling techniques. It positively helped referrals which account for two of the businesses studied, it improved communication and accessibility with the businesses and it offers a benchmark of what's happening in regional counties nationally. Early engagement with industry in this county allowed the formation of a better understanding of the business environment. The following events were attended to evaluate understanding of Design, openness to new thinking and business practices and find potential participants for field research.

- County Business Expo 2015 - 13th September
- SME village, Ploughing Championship 2015 - 22nd September
- Breakfast Morning - 26th January
- Business Networking Seminar - 28th January

A web search was conducted to search for suitable businesses. Businesses contacted included; local food/artisan food producers, breweries and recruitment agencies. These were chosen as they fitted the sample criteria and aligned with the region and APJ SE 2015-2017. These factors also initiated contact with organisations including BEET Ireland (2) and a county tourism organisation.

Visiting the premises of local business initiated participation for the pilot study.

The template of the business map Designed from data in this pilot study, proved fundamental in explaining and conveying the research intentions and the projects capabilities to future participant businesses. Further participants were contacted at the place of business, local events and obtained through referral, word of mouth, suitability and willingness to participate. The process of gaining participation with each business follows. Due to the vast amount of qualitative data being produced, the sample size for this research project comprises of five micro-enterprises from a broad range of industries. A synopsis of these businesses can be found in Table 3. The intention of this sample strategy is to offer a holistic picture of micro-enterprises and their relationship with DT applicable to regional towns across Ireland.

Business	Enterprise type	Company Type	No. of Employees Full-time (FT) Part-time (PT)	Contact
Business A	Up-cycling workshop	Sole-Trader	1 (FT) 1 (PT)	Owner
Business B	Holistic Therapist	Sole-Trader	1 (FT)	Owner
Business C	Craft Brewery	Family run LTD Company	3 (FT) 1 (PT)	Co-Owner's
Business D	Urban Hydroponics	Sole- Trader	1 (FT)	Owner
Business E	Wild Mushroom Producer	Family run LTD Company	3 (FT)	Co-Owner's

Table. 3 Participant Businesses

(2) BEET Ireland are a dedicated team of farmers, food businesses and agri-enterprises that aim to return the Sugar Beet industry back to Ireland

3.2.3 Pilot Study (Business A)

The objective of field research was to visit businesses fitting the sample criteria, undertake qualitative research and interpret a holistic understanding of each business. This understanding intended to include the history, current state and desired future of the business, the personal characteristics and motivations of the owner/owner's and the difficulties and challenges they are facing. Cognitive frameworks including POEMS and 5 human factors (page 54) were reviewed before the visit to facilitate the development of this information during research. Field research also had the objective of exploring how Design can create value for each enterprise and be integrated within them. Although these findings are predominantly developed after reflection of each case-study. Notes on this value and ideas in how it can be applied are recorded throughout case-study collection.

Participation for the pilot study was achieved by visiting the place of business. Many businesses that fitted the sample criteria were visited during the process of gaining participants. Business A satisfied the sample criteria and further aligned with this research due to the novelty of the business and business idea, which offers broader value creation. An informal conversation built an understanding of the owner's new business and his progress to date. An explanation of the research project being undertaken was then shared. Building on the perceived interest from the owner, further details were given in regards the process of field research. It was discussed that the visit would consist of spending part of the work day at the workshop to observe and understand how the owner operates and difficulties that are faced. It was highlighted that it would be very informal and work can ideally continue as normal. The pilot study with business A was undertaken on the 5th of March 2016 with the owner.

The research included a three hour visit to the enterprise. The visit started with reiterating the intentions and outline of the research. This was followed by a tour of the workshop and explanation of the working process. During this time data was obtained through observations, pictures of the workshop and the owner working and notes and sketches recorded in a journal.

This data was translated to a mind map (Page 54 and Appendix C) after the visit which provided the basis to develop a business map (Page, 55) and initial categories illustrated in a template (Page. 62). These documents facilitated the participation, collection and synthesis of other field studies

3.2.4 Case-Studies

Business B

Tourism is an important part of the SE and the county that the study is focused on. Contact was made with an organisation that promotes tourism in the county, regionally, nationally and internationally. This organisation is a joint initiative between the local county council, local development office, Failte Ireland and Private Businesses. A brief section about the project and availability of the researcher was placed in the organisations monthly industry newsletter. One reply was received by email from the Owner of Business B, a Holistic therapy practice. After further communication by e-mail it was arranged to meet the owner for an informal conversation to explain the research project further. At this meeting the template business map from the pilot study was shown. Showing the template business map demonstrated a clearer understanding of the project objectives and capabilities and enabled participation. The visit to business B took place in April 2016 and comprised of a ninety minute visit. The first hour of this visit included an unstructured interview with the owner. Here the process of working and plans for the future were shared and difficulties faced at present were discussed. After the interview the owner offered a demonstration of kinesiology and a tour around the premises including showing the renovated B&B's and outer property.

Data from this visit included promotional material, pictures of the property, recordings, and notes. This data was transferred to the template business map developed from the pilot study. Other secondary data investigated and integrated included online sources, such as social medias sites, reviews and website.

Business C

The SE region has a strong heritage of food and beverage production. Awareness of Business C came through a brochure that promotes regional food and beverages and further online research of the business. The attention to detail of the businesses branding and their messages as a business, found in shops and online suggested that the business would be interested in taking part in the research. Business C is a recently established craft brewery. A visit to the brewery and conversation with the co-owner provided opportunity to discuss the research objectives and illustrate the template from the pilot study to improve understanding. It was explained that the research would be informal and intended to obtain an understanding of the working process and culture of the company. The conversation with the co-owner was positive, "it's always good to hear fresh and creative ideas". The field visit to business C encompassed a ninety minute unstructured interview with husband and wife co-owners and a tour around the brewery on the 11th of May 2016. During the interview it came to light that the owner of Enterprise B had discussed their experience of being involved with the research. The outcome of this visit was notes, recordings, sketches and pictures which were transferred to the template business map. Other secondary sources investigated and integrated included online sources, including social media sites, reviews and website.

Business D

Business D satisfied the sample criteria of this study. Being a local food producer, a novel business idea and offering broader value creation further aligned with the research. Business D is a local producer of exotic hydroponic vegetables that are delivered to local restaurants by bicycle. The business was discovered in the local newspaper. A visit to the business provided opportunity to explain the objectives of the research and illustrate the template from the pilot study to improve understanding. The owner was more than willing to participate in the research project. The field study with business D included a three hour visit with the owner in June 2016. The visit included a thorough explanation of the process of hydroponics and the system the business has developed. The owner also discussed the working process and how resources are obtained. For the remainder of the visit different

crops produced were shown. A photographic log and a tour of the property concluded the visit. The outcome of this research included: notes, recordings, sketches and pictures which were transferred to the template business map developed from the pilot study.

Business E

It has been highlighted that local food and beverage production is an important of the region (APJ SE, 2015-2017). Events centred on local produce were attended throughout research to make connections and find businesses to participate in the research. Business E was discovered at A Maritime Festival in June 2016. While there were twenty food producers from across Ireland in the main food tent at the festival, each with an individual stall. The stall of Business E who are wild mushroom producers was the busiest, and most vibrant and consistent in terms of branding. Visiting their stall enabled the introduction of the research and the illustration of the template business map. During this initial conversation it was highlighted that the business owners are friends with the owners of Enterprise C and have heard about the research. The owners were happy to collaborate. The visit to business E included a one hour visit to their mushroom growing tents and an unstructured interview with a co-owner on Tuesday the 12th of July. The first thirty minutes included an unstructured interview with the co-owner in regards to the business, their personal motivations and difficulties faced. After the interview a tour of the mushroom tunnels and explanation of the growing process took place. The outcome of the visit was field notes, recordings, notes, sketches and pictures, which were transferred to the template business map. Other secondary data investigated and integrated included online activity sources, including social media sites, reviews and website.

Each enterprise was re-visited after completion of their business documents. At this visit a summary of the research process that took place was described. The business map and other AOCs specific to each business were also given. These documents intended to increase understanding of the relevance of Design and how it can be applied to their business. Findings from all business case studies follows in chapter four. Integrating all case-studies with the categories developed in the pilot study initiated synthesis. Further re-structuring and comparative analysis of the categories identified the core category and sub category of

this study, illustrated in the final business framework. This framework directed the Design phase of the research.

3.2.5 Design Interventions

The final framework developed from synthesis of field studies illustrated two distinct but directly related needs in these micro-enterprises. In answer to these needs, the project was directed to the development of both an 'Ecology Mapping' and strategy framework. The 'Ecology Mapping' is a method developed in answer to the need of micro-enterprise owners to understand their businesses purpose and identity. It is called 'Ecology Mapping' to emphasise the living and integrated nature of business and the visual and iterative nature of the method. Being based in designCORE at the Dargan centre in the Institute of Technology Carlow made testing of the 'Ecology Mapping' possible. DesignCORE introduced the business owner to the research taking place. Through further conversation with the owner it was clear that the business could benefit from taking part in the 'Ecology Mapping'

The 'Ecology Mapping' included a series of four workshops with business F. The objective was to use DT to enable the business owner to understand and articulate their business purpose and identity. This knowledge intends to offer a strong foundation and concise understanding that facilitates future activities. The process was open to select people based in designCORE who contributed to workshops throughout. These people came from a range of backgrounds and brought different expert knowledge. "The best practice in Design is to integrate people from different backgrounds into a Design research team" (Lojacono and Zaccai, 2004). The process incorporated constant planning, visualising and refining of information. The outcome was a change of perspective for the owner and documents to facilitate distilling of information and transfer of knowledge.

The strategy framework was developed to tackle the second need of micro-enterprises in adopting Design-led innovation. This intervention intends to facilitate a micro-enterprise in adopting Design-led innovation throughout their business. It is not developed to a testing stage in this research. The development of both of these interventions are illustrated in Chapter Five.

3.3 Reliability and Validity of the Research

It is the theoretical sensitivity of the researcher that helps formulate theory that is faithful to the study (Glaser, 1978, p.46). Theoretical sensitivity refers to a personal quality of the researcher in understanding the area before research and the abilities in giving meaning to data, recognising patterns and distilling information (Strauss and Corbin, 1990. p.41-42).

The illustration of visual maps throughout intends to tackle both of these issues. The development of single page visuals enabled the collection and synthesis of diverse information during the literature review, field research and Design phase of the thesis. These had the intention to reduce the risk of missing important information, improve pattern recognition and storytelling and provide a foundation of knowledge to base interpretation on. The constant refinement of visuals improved their Design and validity. Findings developed from research show a strong correlation with recent policy documents on Design in Ireland and align with the industry and community development initiatives in the SE Action Plan (APJ-SE 2015-2017).

Biddix highlights that some qualitative researchers reject the concept of reliability and validity due to their roots in positivism (2016). Denscombe states that Grounded theory has roots in pragmatism and hence the value of any theory can only be gauged by how useful it is at a practical level (2010, p.109). Similarly, Design and action research are change orientated and must work at a practical level. The 'Ecology Mapping' successfully achieved its objectives in building the understanding of the participant business identity and purpose. The 'Ecology Mapping' method was strengthened throughout by the inclusion of stakeholders with diverse knowledge from designCORE.

While grounded theory provides an intensive framework for gathering data and developing theory, there are significant variations in grounded theory practice and general understanding. In the case of this thesis, there is a high emphasis on visualising, developing single sheets of information and reflecting and refining on these throughout. Grounded theory, action research and Design are all heavily influenced by the researcher's abilities and

interpretations. In a study with a large amount of unstructured data, there are many chances of a wrong interpretation or direction and significant obstacles in reproducing the process.

3.4 Ethical Considerations

The research adhered to the ethical guidelines set by The Institute of Technology Carlow's Ethics in Research Policy and referenced ethical procedures set by designCORE. An Ethics Consent Form which also acts as an information sheet for participants was given to each business before the field visit. This form offered assurance to the business regarding their anonymity and the confidentiality of information collected which is only for academic purposes and this particular research. This was crucial due to the volume of data being generated and critical nature of the research in discovering weaknesses, challenges and obstacles within the businesses. A sample of the Ethics consent form can be found in Appendix F.

3.5 Limitations of the Research

The focus of the research being on micro-enterprises that do not have expert knowledge on Design resulted in limitations of the research methods. Gaining participation for field research proved difficult due to the lack of time that these business owners have and encouraging them to place their confidence and trust in a sole researcher project. The unfamiliarity with Design terminology contributed to these difficulties. The informal and diverse nature of the businesses made it difficult to use consistent research collection tools. While business A and D provided opportunity for observations to be made of the owner's working process. Other case-studies made it difficult to observe work at a practical level, resulting in unstructured interviews and tours of the place of business.

The systematic way of analysing data developed by Strauss and Corbin can be daunting in terms of the complexity of the process (Denscombe, 2010, p.119). Grounded theory requires significant time to build information to a level of developing theory. There was approximately one month between each case-study. This time was needed to develop each business map to a sufficient level. Consequently, the study offers a small sample size of five businesses. While it is difficult to generalise findings from research with a small sample size. This research does offer the study as a representation of regions across Ireland, due to the novelty of the research topic and findings, and validity and relevance with current broader factors.

The "Ecology Mapping" was time consuming, while it consisted of four workshops, a significant amount of planning and reflection was needed throughout. Additionally, as it relates to strategic and cultural change it is difficult to see measurable and immediate change in the short time frame of the research project. In the ecology mapping it is highlighted that formalising the reflection process may enhance the transfer of knowledge.

This study is underlined by the discipline of Design due to the education and experience of the researcher. There are close alignments with other business fundamentals including management, strategy and innovation, that were explored briefly in the literature review and conclusions of this study. These may be developed further to see alignments, shared goals and further strengthen the validation of Design and DT in the business context.

Findings highlight that DT demands new approaches and ways of thinking compared to traditional approaches of Design. While the study offers a framework to direct similar studies in the field research and 'Ecology Mapping' phases of the study. It is highlighted that new practice of DT is evolving and mind-set and method changes are needed even for experienced Designers.

3.6 Conclusion

This chapter describes the theoretical approach of the research and methodological tools used. Design methodologies facilitate research throughout and are most visible in the visualisation of data which enhances the application of grounded theory and action research. Sampling for field research is purposeful. Interaction with local businesses is initiated by attending business events, contacting organisations, emailing businesses and visiting the place of businesses. Participation is achieved through interacting with the owners at events and place of business, positive referrals and one reply that stems from the tourism organisation contacted to promote the research. All businesses fit the sample criteria and align with industry and regional initiatives. Some share novel similarities with DT in offering broader value creation. Data generated from the pilot study enables the development of a business map and template which facilitate the collection and synthesis of all case-studies. The final framework developed from these initiates the development of two Design interventions. The first intervention is developed as 'Ecology Mapping' with a real business. Here DT and a diverse group from designCORE are successful in building understanding of the participant businesses identity and purpose for the owner. The second intervention, the strategy framework, builds on findings generated from 'Ecology Mapping' and is developed to facilitate the owner to practice Design-led innovation on a day-to-day basis.

4.0 Analysis and Findings

This chapter demonstrates the approach to field research data collection and analysis. Firstly, the creation of a mind map (Buzan, 2005) demonstrates how data generated in the pilot study is synthesised. This leads to the development of a business map that enables deeper understanding of the business and a template which summaries findings. The business map and template facilitate the collection and synthesis of all case-studies. Each case-study is described with a focus on the owner and concludes with a summary of the difficulties facing the business based on the categories from the template. Further re-structuring of these categories enables the creation of the core category and sub-categories, illustrated in the business framework. This framework is validated through comparative analysis with Doblin's innovation framework and enables the Design phase of this thesis. The chapter concludes by answering the research questions that emerged from the literature review. Each phase of field research is visualised throughout the chapter and a full visual can be found in Appendix G.

4.1 Breakdown of pilot study

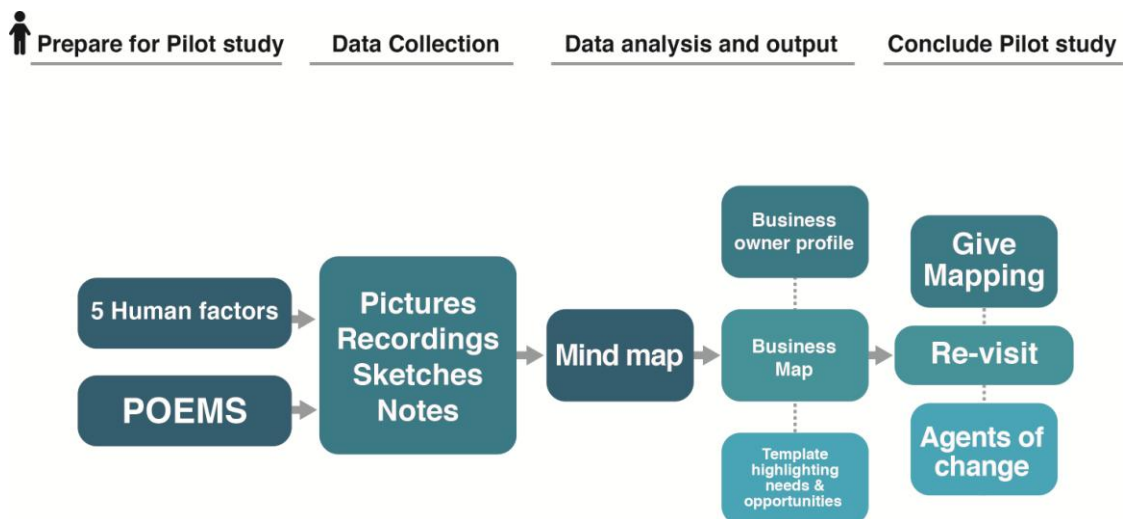


Fig 12. Breakdown of Pilot Study

The objective of the pilot study is to visit Business A, conduct qualitative research and develop understanding of the culture of the business, owner, and challenges they face. Preparation for field research includes reviewing Design research methodologies, 5 human factors and POEMS (Fig.13) (Kumar, 2010). 5 human factors is a framework that aids in understanding the experience of the participant while POEMS is a framework that aids in understanding the broader environment. These methodologies are recorded in a journal and provide micro and macro frameworks that facilitate the capture and categorisation of information in the field.

5 Human Factors



POEMS

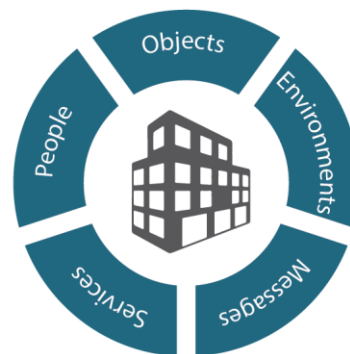


Fig. 13 Design research frameworks (Kumar, 2010) - [Self-Generated Image]

During the field visit data is collected through observations and informal conversations and recorded in the form of notes, sketches, pictures and recordings. Data is synthesised in a mind-map after the visit (Fig.14 and Appendix C). The mind map consists of main headings;

- Suppliers / Materials
- Capabilities
- Strengths
- Difficulties
- Products
- Collaboration and Community
- Customer experience
- Upcycling opportunities in other materials
- Future possibilities and desires

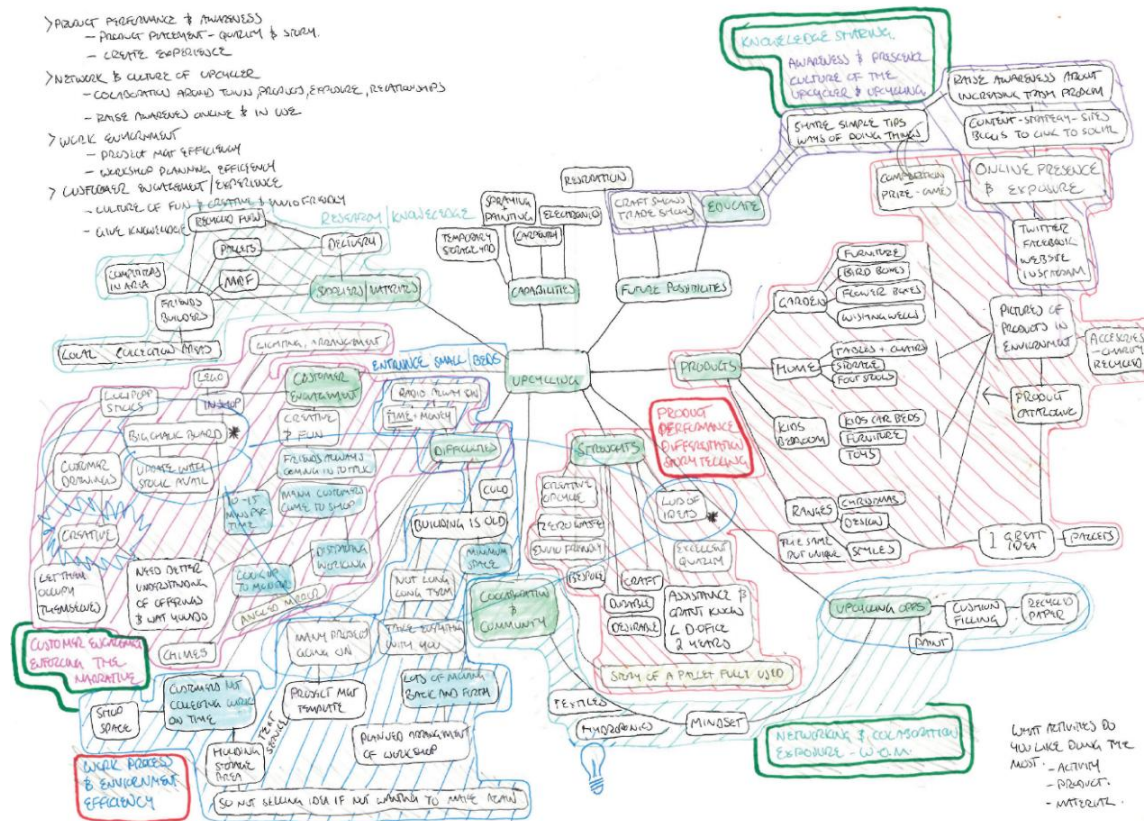


Fig. 14 Mind map from Pilot Study

Content that stems from these headings features interpretations as to where Design can create value, difficulties facing the business and owner, and information that builds understanding of the business activities. Further categorisation of the mind map results in the emergence of four areas of the business where Design can add value. These areas and how value can be added include:

- **Network and Culture of an Upcycler**

The owner wants to grow awareness of the industry and business. This can be achieved by creatively collaborating with the community, giving knowledge, and giving consistent and inspiring messages as a business

- **Work Process and Environment**

Project Management difficulties, staff communication difficulties and inefficient working days can be tackled by communication tools, visualising information, having an inclusive environment and structured and responsive working process

- Product Performance and Awareness

Customer research and engagement can initiate the development of relevant products and services. Creating a context, storytelling and good image presentation can improve product awareness. Categorising offerings can help in how they are perceived and facilitate the owner in offering what he values and desires

- Customer Experience

Decreasing the gap between yourself and your customer is the key to insuring you can provide them with the experiences they expect (Holloway, 2009, p.56). Design considers the customer through every phase of their journey

These four areas provide a basis to develop a more in-depth understanding of the business in the form of a business map. The business map is segmented into six sections stemming from these areas (Fig.15).

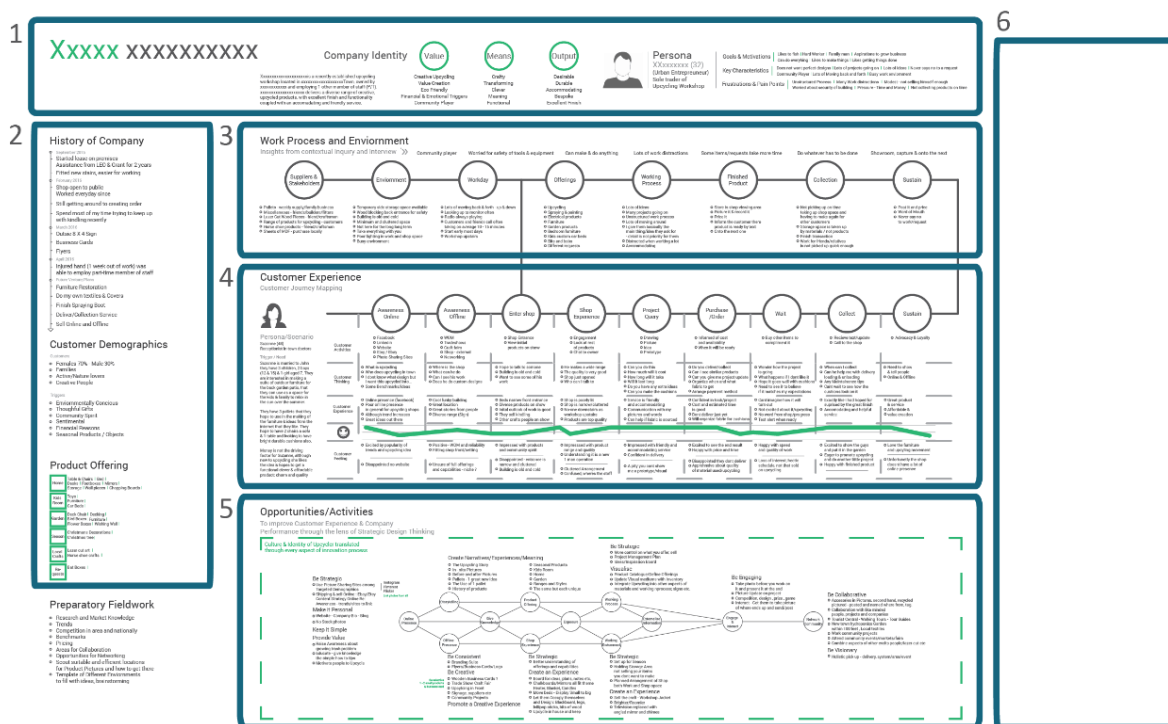


Fig. 15 Breakdown of the business mapping from the pilot study

- Section one aims to understand the culture of the business and the owner. It details values, means and output to develop understanding of the business, and working characteristics, goals and motivations, and frustrations and pain points to build understanding of the owner
- Section two aims to understand the past and possible future of the business. A timeline is created with future desires of the owner incorporated. Customer demographics are explored and product offerings are categorised
- Section three explores the working process and environment. It details a journey of the owner from finding materials, through the working process, to sustaining of business
- Section four describes a persona and a customer journey map. A persona is a representation of a particular audience segment that uses or will use a product or service (*theuxreview*, 2013). A journey map is a technique that maps the customer's journey and their perspective, emotions and experience throughout. Multiple customer perspectives are considered through the customer journey map
- Section five explores and demonstrates where and how Design can add value to the business. It parallels the stages of the customer journey and business owner which offers structure in developing ideas in this section.
- Section six is pictures from the field study that aim to enhance insight creation and storytelling throughout the development of the business map

Techniques used in the business map, reflect visual mapping techniques that have been standard for decades such as work-flow mapping; the visual mapping of steps an individual takes to complete a given activity (Lojacono and Zaccai, 2004). When combined these techniques can reveal insights, the discovery of relationships and help in developing stories. The development of the business mapping is an iterative process. Draft one (Fig.16) provides the basis for further exploration and embedding of stories in all sections.

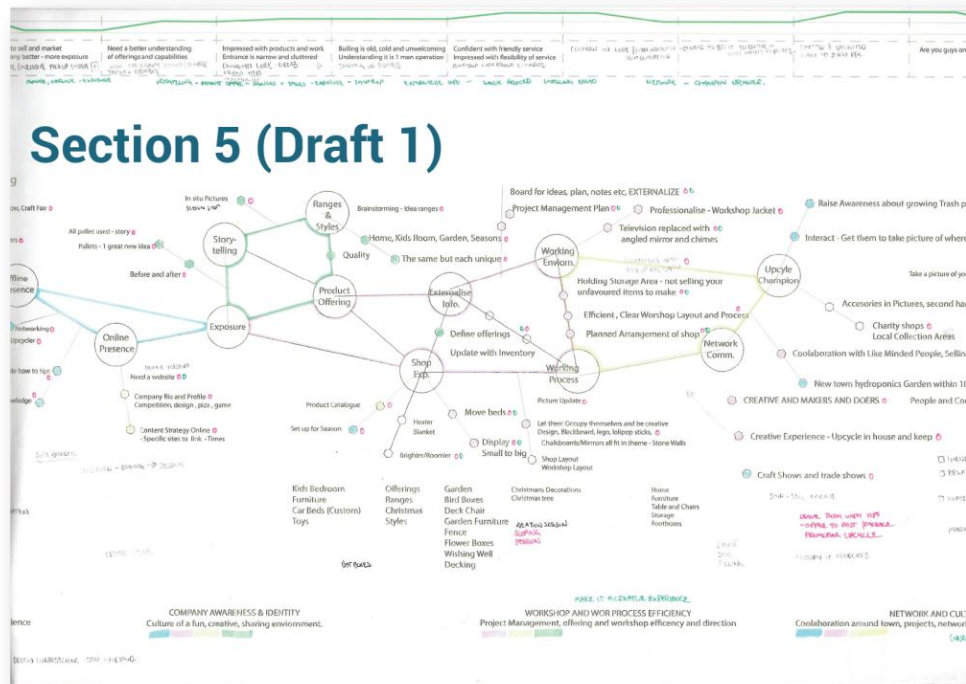
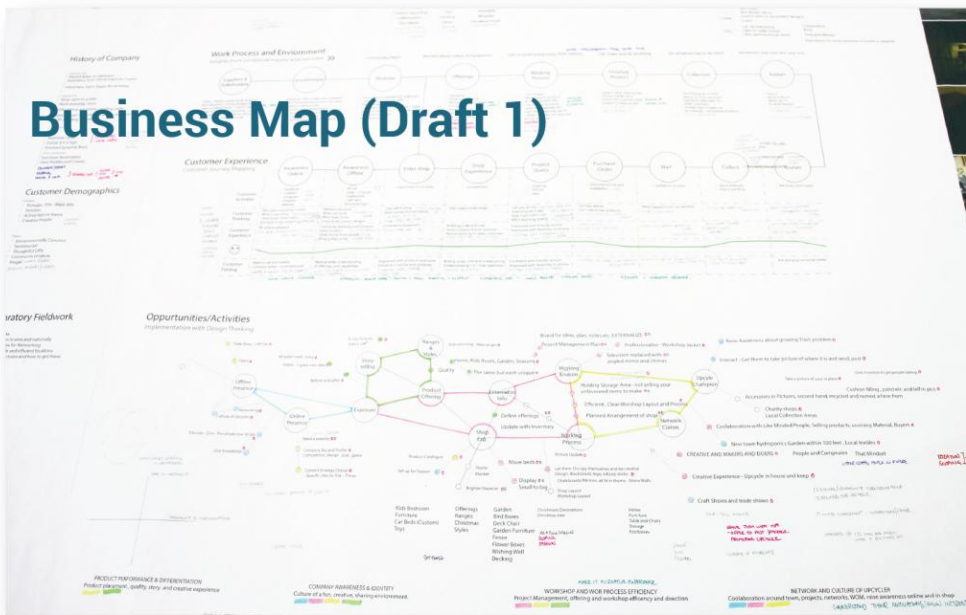


Fig. 16 Business Map and Section 5 from Draft one

The development of section five results in four areas where Design offers value:

- Network and Culture of an Upcycler
- Work Process and Environment
- Business Identity and Awareness
- Product and Service Offering

How these areas transitioned from findings in the mind map study follows (Fig. 17)

Where Design can add Value

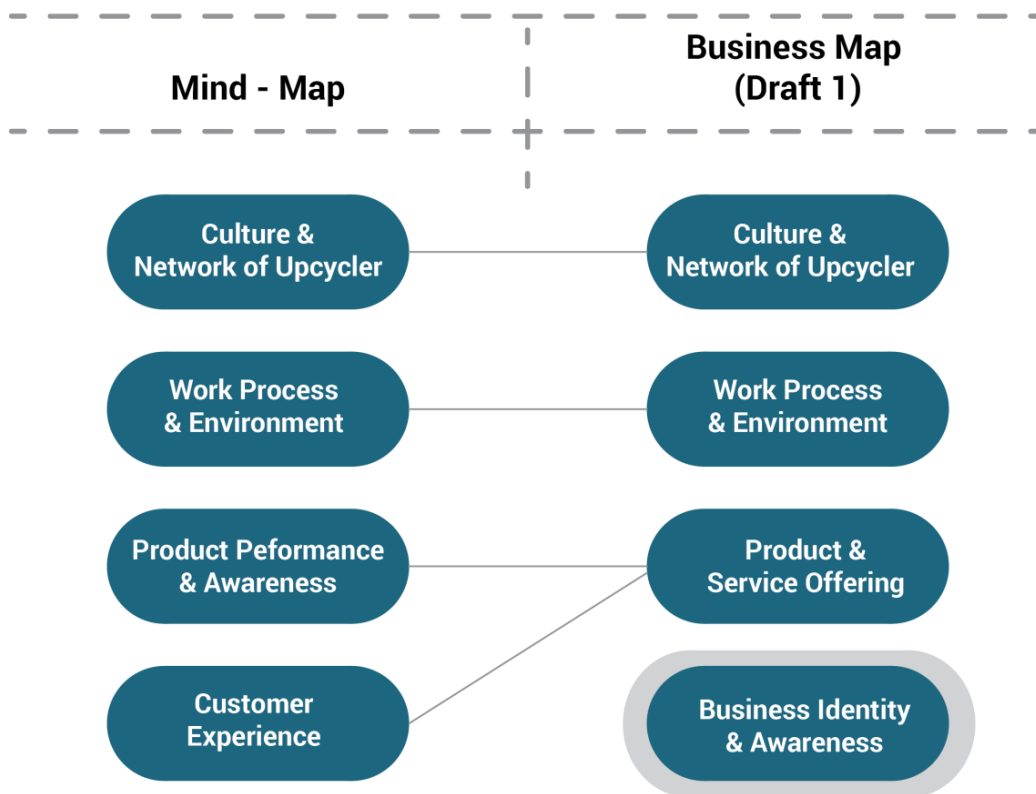


Fig. 17 Where Design can add value, findings from Mind Map & Business Map

Product performance and awareness was combined with customer experience to form Product and Service Offering - This was due to the small nature and limited capabilities of the business. It emerged through analysis that the business and owner have difficulties in communicating. This is evident in project management, customer communication, the lack of purpose, and weak messages and signs from the business both online and offline. It was identified that the lack of an articulated identity of the business from the owner partly contributed to these issues. Building understanding of the identity of the business and owner can enable them to articulate what they desire to do, it can streamline their operations and their messages to something they are invested in. Within all of these areas Design can offer value in similar ways including externalising information, storytelling and categorising information, targeting the right people, giving knowledge, actively collaborating with like-minded people and businesses and creating experiences online and offline.

Draft two of the business map consists of Section one - four being complete and further development, categorisation, grouping, and refinement of section five (Fig. 18).

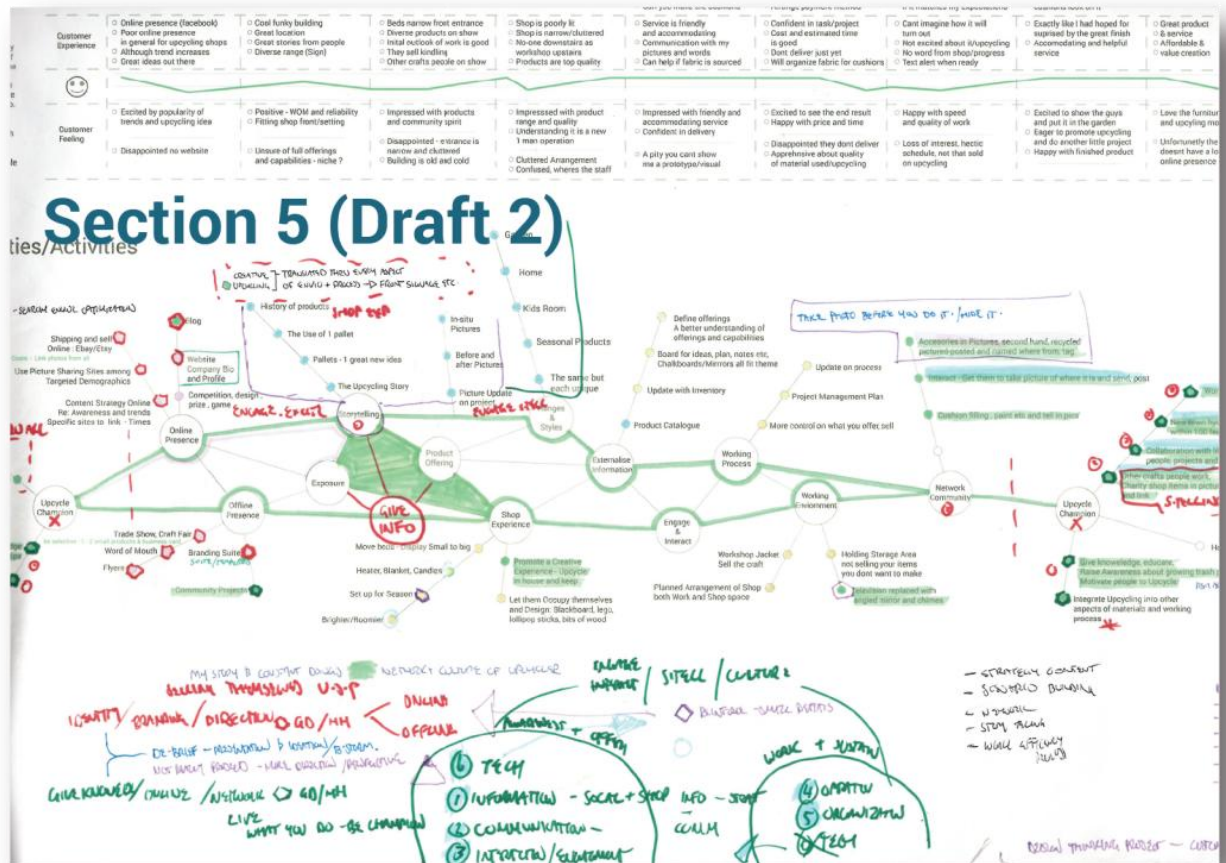


Fig. 18 Snapshot of Section five from the second draft of the Business Map

During synthesis it is illustrated that the business has difficulties in the internal working process and presenting an external perspective of the business. It is highlighted that Design offers opportunity to improve difficulties in both the internal and external environment and connect them. This is achieved by articulating the purpose and identity of the business which builds internal understanding and offers direction, and then presenting it to the external environment through engagement, interaction, storytelling, messages and activities.



Fig. 19 Snapshot of Section five from the final (third) draft of the Business Map

Section five of draft three (Fig. 19) emphasises the culture and identity of the business. This is depicted as the culture of the Upcycler translated through every aspect of the business. This includes;

- Giving industry knowledge
- Aligning messages and signs
- Integrating with other likeminded businesses and projects
- Promoting a creative experience
- Being strategic online and offline in growing awareness, educating people and changing perceptions about Upcycling.

The final draft provides an in-depth picture of the business. Further analysis of section five results in the emergence of categories that encompass the areas of difficulty facing the enterprise and where Design can create value. These categories include:

- Identity and Purpose
- Working Process and Environment
- Offerings
- Messages
- Online Activity
- Value Network
- Knowledge Bank (R&D)

These categories are illustrated on a single page in a book format, accompanied with early thoughts on possible Design interventions (Fig. 20). The book format provides a template that facilitates the collection, synthesis and comparative analysis of future case-studies. This template includes a summary of the owner characteristics and categories generated from the pilot study that describe areas of difficulty in the business and where Design can create value.

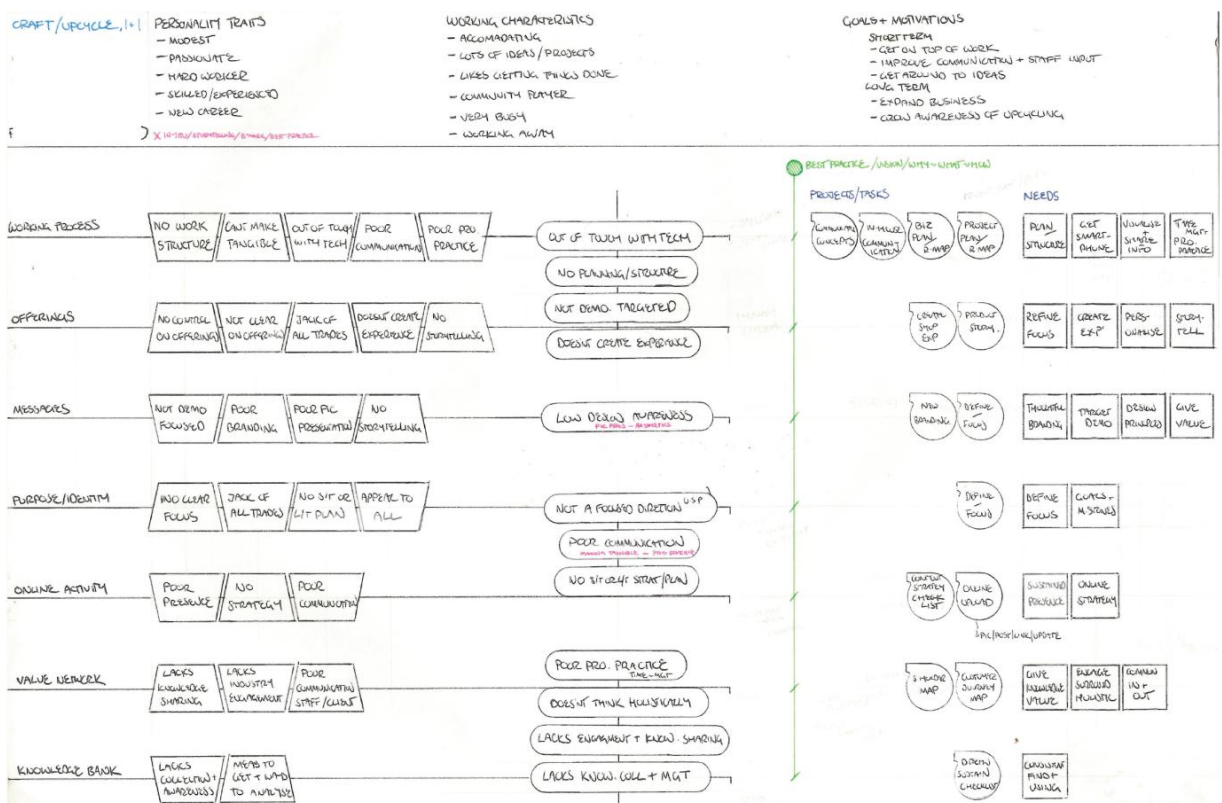
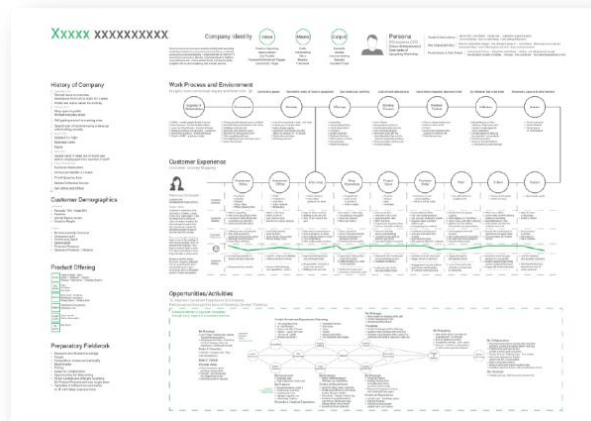


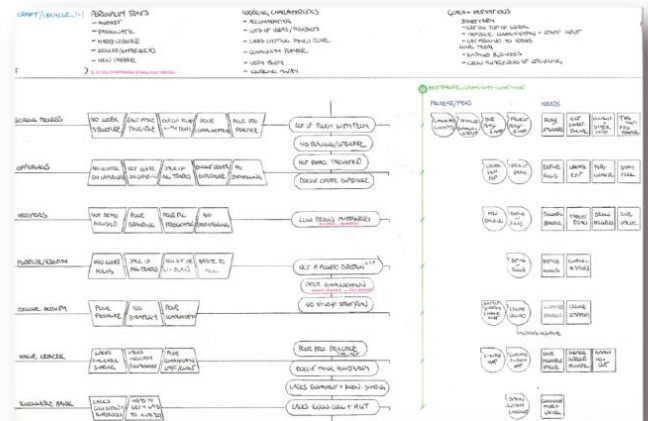
Fig. 20 Book template

The development of these categories enables theoretical saturation of the pilot study. The pilot study is validated by the research supervisors for breadth of research, depth of findings and manner in which they were communicated. The outcome of the pilot study is two main documents including (Fig. 21);

- Business mapping
- Template with categories that highlight difficulties and opportunity for Design



Business Map



Template for synthesis

Fig. 21 Business Map and Template for Synthesis

These documents facilitate the participation of other enterprises and provided a basis to enhance synthesis. Findings from all field studies will follow.

4.2 Analysis and Findings from Case-Studies

This section offers a synopsis of case-studies. Given the small nature of the businesses that this study is focused on, analysis of each business is closely linked to the owner/owners of the business. This analysis includes background information on the business and owner/owners, their characteristics, goals and motivations, and frustrations and pain points. Each business analysis will include the business mapping and concludes by giving a summary of the difficulties facing the business based on the categories generated from the pilot study. Additionally, agents of change will be described which translate some theory generated into visual aids that aim to build understanding of a Design-led approach.

4.2.1 Business A - Upcycling Workshop

(Pilot Study)

Business A is an Upcycling workshop established 2015 that offers a diverse range of functional and high quality up-cycled products. The business is a new venture for the owner through the Back to Work Enterprise Allowance (BTWEA)(3), which entitles him to financial aid, mentoring and tax credits. ONE part-time member also works in the business with the owner.

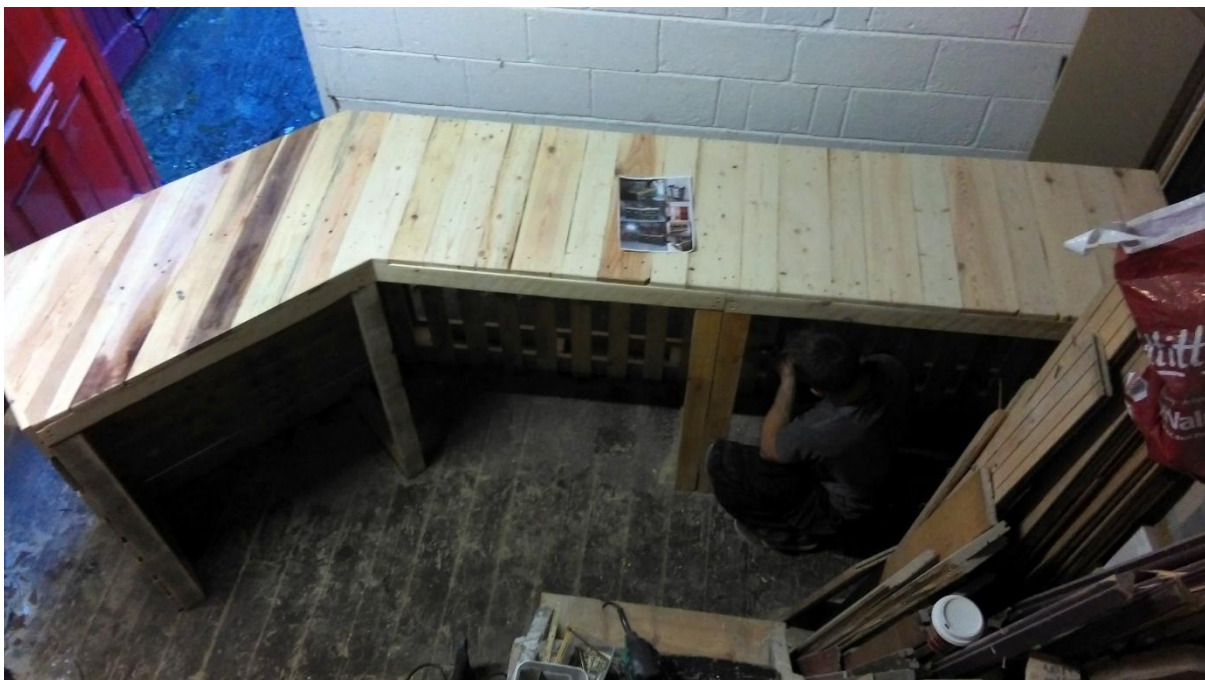


Fig. 22 Picture from field visit to business A

Characteristics of the Owner

- Passionate and excited about new career
- Collaborates through material suppliers, crafts people who sell items in the shop, and local businesses through projects
- Maintains a very relaxed and accommodating relationship with customers
- Has a lot of ideas and many projects happening at the same time, however works without structure; instead adopting a '*do what has to be done attitude*'
- No awareness of Design. Makes functional and durable products but does not have a particular area or product that is favourable. Detail is usually not emphasised by the

(3) The Back to Work Enterprise Allowance encourages unemployed people and those receiving other Social by allowing them to retain a proportion of their social welfare payment, plus secondary benefits.

customer as other triggers such as economical and sentimental reasons drive their rationale "A lady wanted a curved bench for kids. She brought me down a photocopy of a picture, so I worked from that. There wasn't much detail in it, so I just basically give the customer the main thing/idea they are looking for"

- Seasonal work. Summer months are the busiest times of the year due to the many garden related products created

Goals and Motivations of the owner

- "Get on top of work"
- Improve communication with staff and customers
- Move location and expand the business
- Grow awareness and change perception of Upcycling

Frustrations and Pain Points of the owner

- Communication
 - Difficulties in explaining the broad range of products he offers, resulting in projects being customer driven and repetitive
 - Communicating ideas (visualising/prototyping) with customers
 - Communicating and getting input from staff member
- Work structure and project Management
 - No control over products offered
 - No technology to record process and projects
- Certain projects in the past have required significant more time than others
- Getting good local Design work (Graphic) "I sent them basically what I was wanting; colors, shop picture and their 1st draft they set me was not what I wanted. After receiving the work re-done, I'm still waiting on the outdoor sign"

XXXXXX XXXXXXXXXXXXXXX

Company Identity

XXXXXX is a recently established workshop located in XXXXXXX, owned by XXXXXXX. XXXXXXX is a community player with excellent skills and functionality, capable of an extraordinary and timely service.

Value

- Creative Upcycling
- Value Creation
- Eco Friendly
- Financial & Emotional Triggers
- Community Player

Means

- Crafty
- Transforming
- Clever
- Meaning
- Functional

Output

- Desirable
- Durable
- Accommodating
- Responsible
- Excellent Finish

Persona

XXXXXXXX (32)
 (Urban Entrepreneur)
 Sole trader of
 Upcycling Workshop

Goals & Motivations

- Wants to finish / build / flower / family man / aspirations to grow business
- Does not want market design / Lots of ideas / lower cost to a request
- Community Player / Lots of moving work / environment
- Unstructured Process / Many work distractions / Model - not selling himself enough
- Worries about security of trading / Pressure - Time anxiety / Not collecting products on time

Key Characteristics

- Does not want market design / Lots of ideas / lower cost to a request
- Community Player / Lots of moving work / environment
- Unstructured Process / Many work distractions / Model - not selling himself enough
- Worries about security of trading / Pressure - Time anxiety / Not collecting products on time

Frustrations & Pain Points

- Does not want market design / Lots of ideas / lower cost to a request
- Community Player / Lots of moving work / environment
- Unstructured Process / Many work distractions / Model - not selling himself enough
- Worries about security of trading / Pressure - Time anxiety / Not collecting products on time

History of Company

- September 2016
- Started lease on premises: Assistance from LEO & Grant for 2 years
- Fixed new stairs, easier for working
- Shop open to public
- Worked everyday since
- Still getting around to creating order
- Spend most of my time trying to keep up with kindling recently
- March 2016
- Quoted EX 4 Sign
- Business Cards
- Flyers
- Printed hand (1 week out of work was able to employ part-time member of staff)
- Furniture Restoration
- Finish Spraying Boot
- Deliver/Collection Service
- Sell Online and Offline

Customer Demographics

- Customers**
- Female: 70% - Male: 30%
 - Active/Wature lovers
 - Creative People
- Triggers**
- Environmentally Conscious
 - Thoughtful Gifts
 - Community Spirit
 - Financial Reasons
 - Seasonal Products / Objects

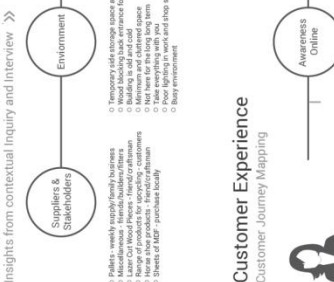
Product Offering

- Home (Tables & Chairs, Beds)
- Workshop (Workbenches, Storage, Wall accents (Chopping Boards))
- Toys (Car Mats)
- Milk Room (Car Mats)
- Deck Chair (Seating)
- Garden (Birdhouses (Furniture), Well)
- Season (Christmas Decorations)
- Season (Christmas Tree)
- Tools (Lawn cutters, Hoses, snow catchers)
- Textiles (Text Books)
- Textiles (Text Books)

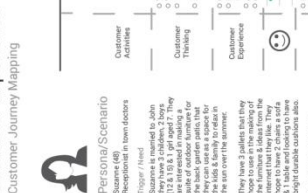
Preparatory Fieldwork

- Research and Market Knowledge
- Trends
- Competition in area and nationally
- Market needs
- Pricing
- Areas for Collaboration
- Opportunities for Networking
- Product Pictures and how to get there to fill with ideas, brainstorming

Work Process and Environment



Customer Journey Mapping



Opportunities/Activities

To improve Customer Experience & Company Performance through the lens of Strategic Design Thinking

Culture & Identity of Upcycler installed through every aspect of innovation process



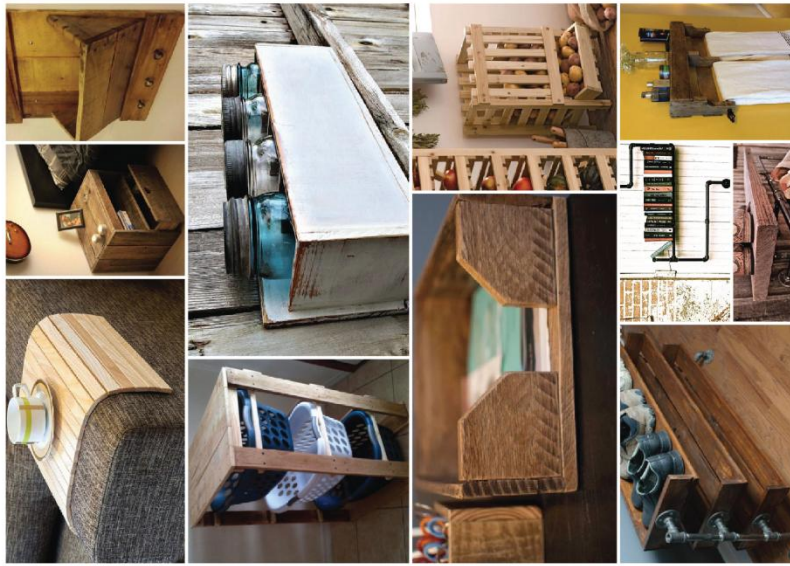
Fig. 23 Business A - Mapping

Difficulties facing the business

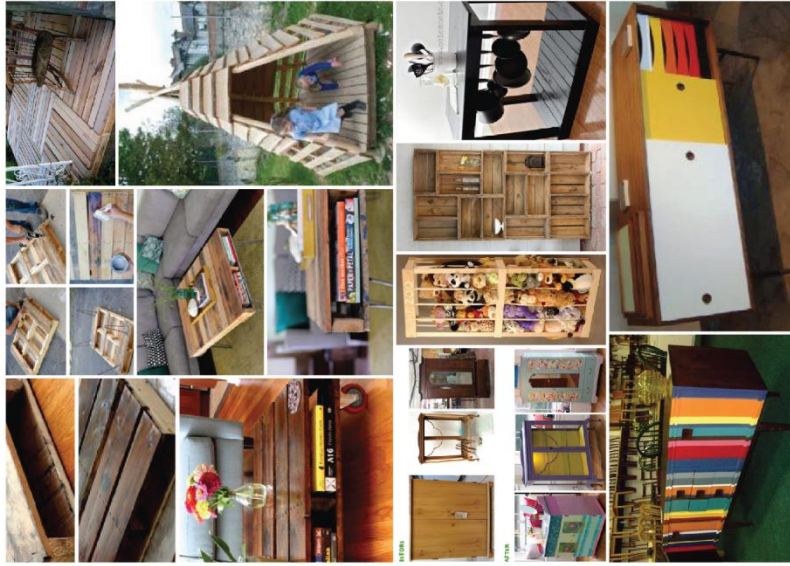
Working Process and Environment	<ul style="list-style-type: none"> - Work without structure - Poor project management - Difficulties in communicating ideas/Making tangible - Does not adapt to new technologies ie. smartphone
Offerings	<ul style="list-style-type: none"> - No control over offerings - Lack of continuity - Does not create experience though customer journey - Does not categorise offerings, storytell or create context
Messages	<ul style="list-style-type: none"> - Not demographic focused - Messages and branding not aligned - Does not storytell, showcase pictures and previous work
Identity/Purpose	<ul style="list-style-type: none"> - No clear focus, will and wants to do everything - No short term or long term plan
Online	<ul style="list-style-type: none"> - Poor online presence
Value Network	<ul style="list-style-type: none"> - Silod practice - Does not engage with environment - Lack of knowledge sharing
Knowledge Bank (R&D)	<ul style="list-style-type: none"> - Does not seek inspiration or insight - Not able to print information

Table. 4 Summary of Difficulties facing Business A

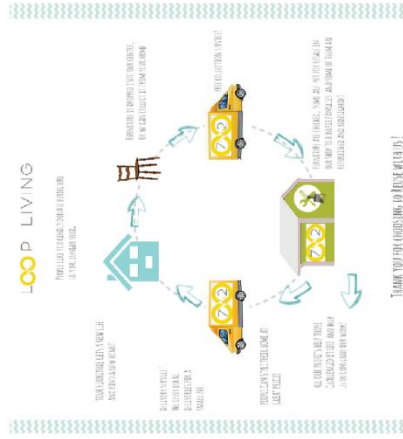
Agents of Change - Business A



| Inspiration for small projects, using scrap pieces and cut offs.
Examples of context, scenario creation and picture presentation



| Inspiration for larger projects, examples of context, picture presentation, do's & don't's and storytelling - before & after



| Enabling understanding of the broader network, interactions and value creation
(Seventy two loop living - Dublin)

Other AOC's given but not illustrated

- | Categorising the businesses offerings intends to offer clarity to what is offered, how it is explained and presented
- | Relevant websites and blogs to stimulate inspiration and understand current trends

Fig. 24 Business A – AOC

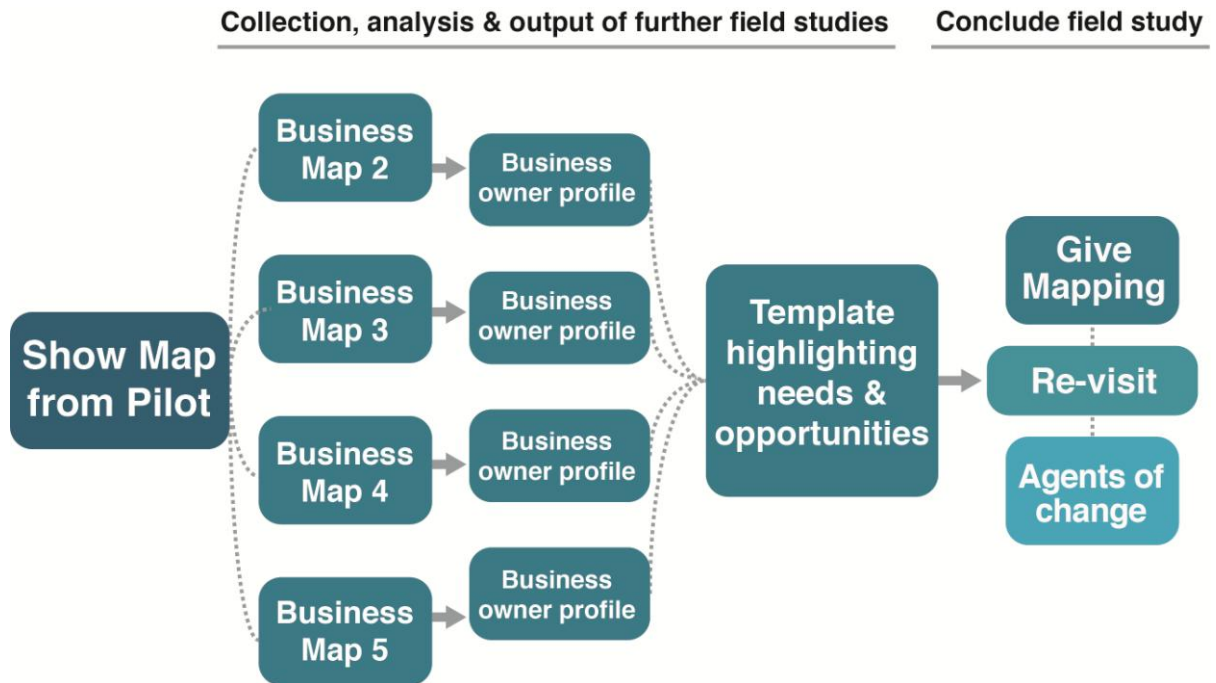


Fig. 25 Collection of other field studies

The business map generated from the pilot study improves understanding of the project and Design's objectives and capabilities to other businesses and enables participation.

4.2.2 Business B - Holistic Therapist

Business B is a holistic therapist located in a family guesthouse set in a rural environment. The owner founded the business in 2012 and now runs her alternative healing practice from the guesthouse. With a passion for alternative healing, including systematic kinesiology, energy therapy, massage and yoga, the owner plans to develop the guesthouse and grounds into a healing centre and destination for wellness in the next five years. Four newly refurbished guestrooms, will host B&B guests starting in May 2016.



Fig. 26 Picture from field visit to Business B

Characteristics of the Owner:

- Ambitious in business plan
- Passionate about alternative healing and inspired to help people
- Deep and diverse knowledge from the most renowned and innovative practitioners
- Excellent customer service reflected in a recent customer service award
- Involved with the community, doing local dance and yoga classes for all ages, including the elderly and MS sufferers. Also the main driver of a meet up group and directory that promotes alternative healing therapies regionally

- Offers a diverse range of therapies.
- Lots of ideas and plans for the future expansion of the retreat. "Lots to do, lots of ideas, I'm tired at times and the pressure is huge, other times it is worth it"
- Works without structure and visible plans despite a hectic schedule
- Seasonal work - "There seems to be ebbs and flows in this business, times where I can be completely booked out and times where there are only a few clients calling. It's about being versatile and being able to use the quieter times to enhance my business through networking, social media and further training"

Goals and Motivations of the owner:

- "Resurrect" the guesthouse and make her family proud
- Develop it into a wellness retreat comprising of four guestrooms, her practice, yoga/dance studio and glamping.
- Have adventurous aspects to her retreat, utilising the beautiful location and abundance of nearby attractions and activities
- Grow awareness and change perceptions of holistic therapists and kinesiology

Frustrations and Pain points of the owner:

- "I like to focus on viral infections and back pain, where I'm seeing the best results" however this not evident on the business website and in messages
- Messages lack a personal touch, empathetic engagement and growing awareness of the surrounding location
- Giving too much information in online content, difficulties in distilling information
- While active online, this happens from a home computer. The owner does not have a smartphone. When online the owner is responsive on social media sites, however the website gets little attention, and it looks dated and is cluttered with information.
- The brand does not reflect the business anymore; "Not happy with the name or logo. It is what I wanted at the beginning, but doesn't portray what I do. It feels feminine. What I actually do is more physical, masculine and mechanical. I often describe how it is being like a mechanic to men"

XXXXXXXXXXXX

Company Identity

XXXXXXXXXX is in the process of being reimagined. XXXXXXXXX is to be reimagined and repositioned. 5 years into the original 10 year plan, XXXXX is being with natural therapists. The 4 B&B Questionnaires have just been completed. The reimagining process is the development of a new studio and offering facilities.

Value

Understanding one's body
Better health
Positive Experience
Empowerment
Visible health
Old world charm

Means

Deep Knowledge
Friendly Service
Knowledge Sharing
Reimagined Living
Community Practice
Active, social experience

Output

Neutral/Therapist
Energy Channel
Knowledge Sharing
Reimagined Living
Community Practice
Active, social experience

Persona

XXXXXXXXXX (34)
(Holistic Health Initiator)
Entrepreneur, Designer and Owner
of XXXXX

Goals & Motivations

Help people | Reinvest Guesthouse and make Family proud
Reinvest in the business
Be Motivated and Overcome Successful Women Personal & Professional
Innovative | Non-materialistic | Lots of Ideas | Educated by the best | Facilitator
Ourselves | Driven | Advocate All things natural | Caring | Traveler | Easy going
Liberal | Community Player | Networker | Knowledge Over | Friendly | Motivator
Branding does not reflect practice | Need to get good work, logo, etc.

History of Company

- Start Your Own Business course
- Initially created a buzz by offering free treatments - word of mouth is what I live on
- Began working on guesthouse and guestrooms March 2014
- Attended biochemistry seminar followed by 10 days of yoga retreats over the year
- Developed a business plan to be used and increase depth of knowledge
- December 2014
- 2015: Started the photography and am the main host of group meetings
- March 2016
- 2016 Customer Service Award
- At the moment I am trying to get the 4 bedrooms finished. Practice is going well and keeping me going
- Am going to for B&B open
- XXXXXX website online
- Energy Movement Plans
- Intimate barroom class experiences
- Develop yoga/dance studio
- Developing gyming facilities for up to 30 people
- Build beds in natural materials
- Lots of work on property when the D&B are done

Customer Demographics

- INDIVIDUAL - females 50% - male 50%
- Age 30-40
- Work/Who/Obstacles/Blocks: 21
- Adventurous, nature lovers, yoga, mindfulness, easy going, free thinkers, open minded, social, environmentally conscious
- Professionals
- Relaxation & Rejuvenation
- fed up of same results/cycle
- Try something different
- Self care
- Team bonding
- Optimise life and health
- Sustained fitness

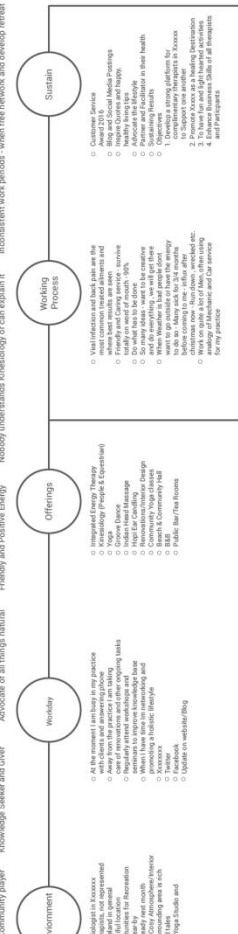
Service Offering

- Relaxation | People | Heals
- Back, Neck and Shoulder Pain
- Low Energy | Chronic Sickness
- Stress Management
- B&B | Petals and Cakes
- Stress Anxiety Pain and Phobias
- Chronic long term Illnesses
- Good quality Massage
- Yoga Practitioner/Block Break
- Challenging - volunteers to help?
- Nutritional Advice
- Address performance testing
- Developing water activities
- Developing a body of any size through yoga.

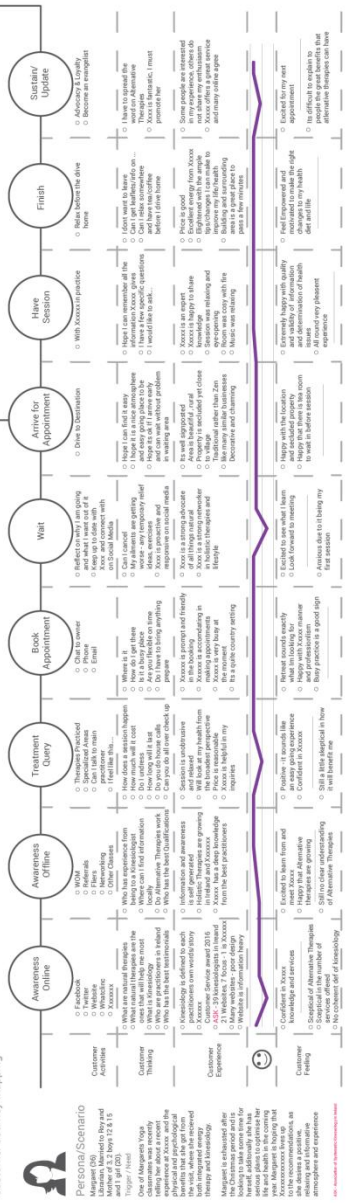
Preparatory Fieldwork

- Research and market knowledge
- Trends
- Research in use and critically
- of knowledge and interrelationally
- how they market themselves
- Mapping of company goals and activities
- 5 year plan

Work Process and Environment



Customer Journey Mapping



Opportunities/Activities

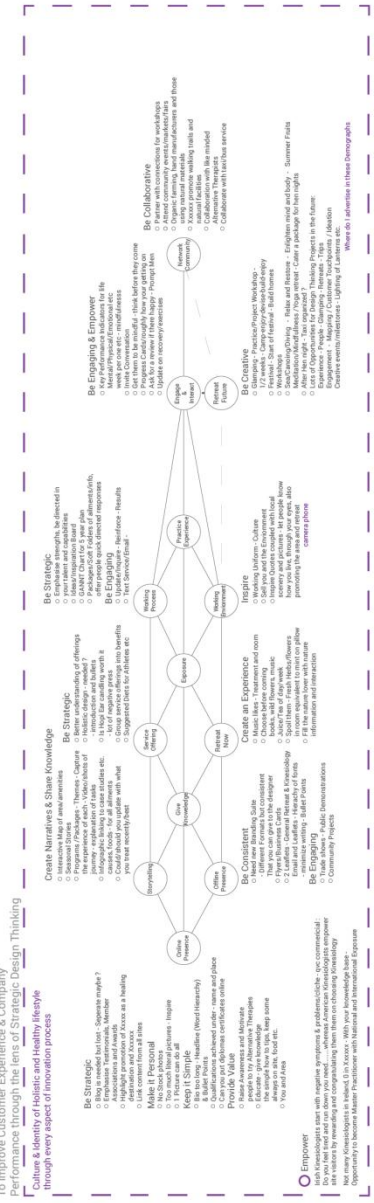


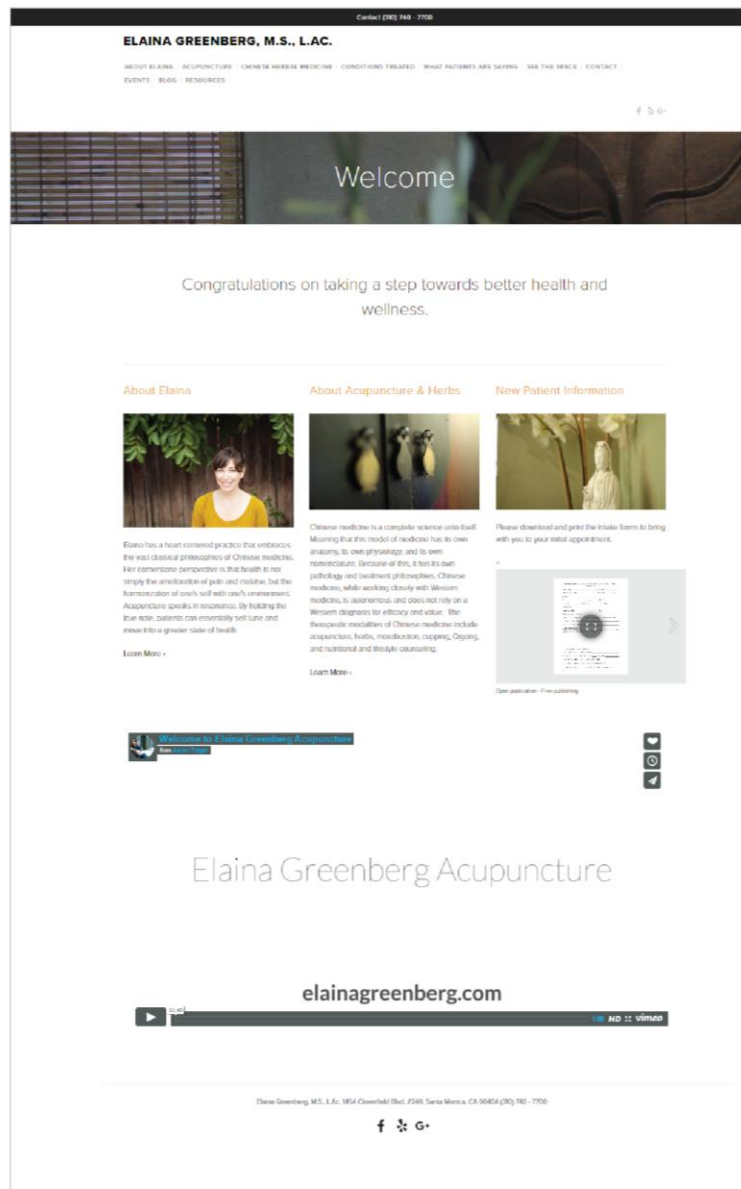
Fig. 27 Business B - Mapping

Difficulties facing the business

Working Process and Environment	<ul style="list-style-type: none"> - A lot of ideas and things to do, but works without structure - Does not adapt to technologies, ie. smartphone - Doesn't visualise/externalise information
Offerings	<ul style="list-style-type: none"> - Diverse offering - Does not create experience though customer journey
Messages	<ul style="list-style-type: none"> - Not demographic focused - Information overload - Branding not reflective of business - Messages not personal or engaging - No storytelling ie. Incorporating pictures of the weekly yoga class on the beach
Identity/Purpose	<ul style="list-style-type: none"> - Diverse offerings - Not clear and reflective of branding - Ambitious and complex plan but not visual/tangible
Online	<ul style="list-style-type: none"> - Not personal - Not strategic, all content goes everywhere - Website not updated and too much information
Value Network	<ul style="list-style-type: none"> - Needs to celebrate and communicate collaborations - Lacks personal knowledge sharing
Knowledge Bank (R&D)	<ul style="list-style-type: none"> - Accumulates information but analysis and compilation is messy and unstructured

Table 5. Summary of difficulties facing Business B

Agents of Change - Business B



[\(http://www.elainagreenberg.com/\)](http://www.elainagreenberg.com/)

Secondary research found that alternative healing therapies in Ireland often use negative framing ie. is your back sore? Positive framing is found on this website homepage of Elaina Greenberg, Acupuncturist from the U.S.

“Congratulations on taking a better step towards health and wellness”

This website also offers a positive benchmark for its clean aesthetic and concise information. It is also personal and interactive through pictures, videos and early documents for a visit.

The owner of Business B is great at providing motivational quotes online combined with stock images. It was highlighted that personalising the quotes by taking pictures of the surrounding area, which is a key selling point of the business. Could improve awareness of the business activities and improve identity.

Fig. 28 AOC Business B

4.2.3 Business C - Craft Brewery

Business C is a family run craft brewery. The family re-located to the region in 2010 and building on their love for craft beer and the growing craft beer industry in Ireland, decided to establish their own brewing company. Their beers are now available nationally and in Northern Ireland and are looking into the possibility of exporting to the UK in the future. One full-time member of staff works with the owners.



Fig. 29 Picture from field visit to Business C

Characteristics of the Owners:

- Passionate about craft beer and their produce, knowledgeable about the industry
- Ambitious and driven in their approach
- Responsive online and offline and do extensive networking and promoting
- Understand the value of the brand "Now the bar has been raised, you have to have a better offering for all consumers - the distributor - on and off trade - the brand"
- A social family and this can be seen throughout their history as they continue to promote other craft brewers, network and offer tastings regularly
- Proactive in pairing their beers with foods online and offline

- Focus on using local produce as much as possible

Goals and Motivations of the owners:

- Their aim is to remove the barriers and change the opinions between the wider audience and craft beers in Ireland
- Their belief is that the competition for craft brewers is not the other craft brewers, but the larger companies such as Diageo who aim to make "converts for life"
- Develop the food aspect of their enterprise. "I think we can add significant value by adding a food and drink page on our website"
- Develop the tour aspect of their brewery
- Develop more beers and seasonal specials

Frustrations and Pain points of the owners:

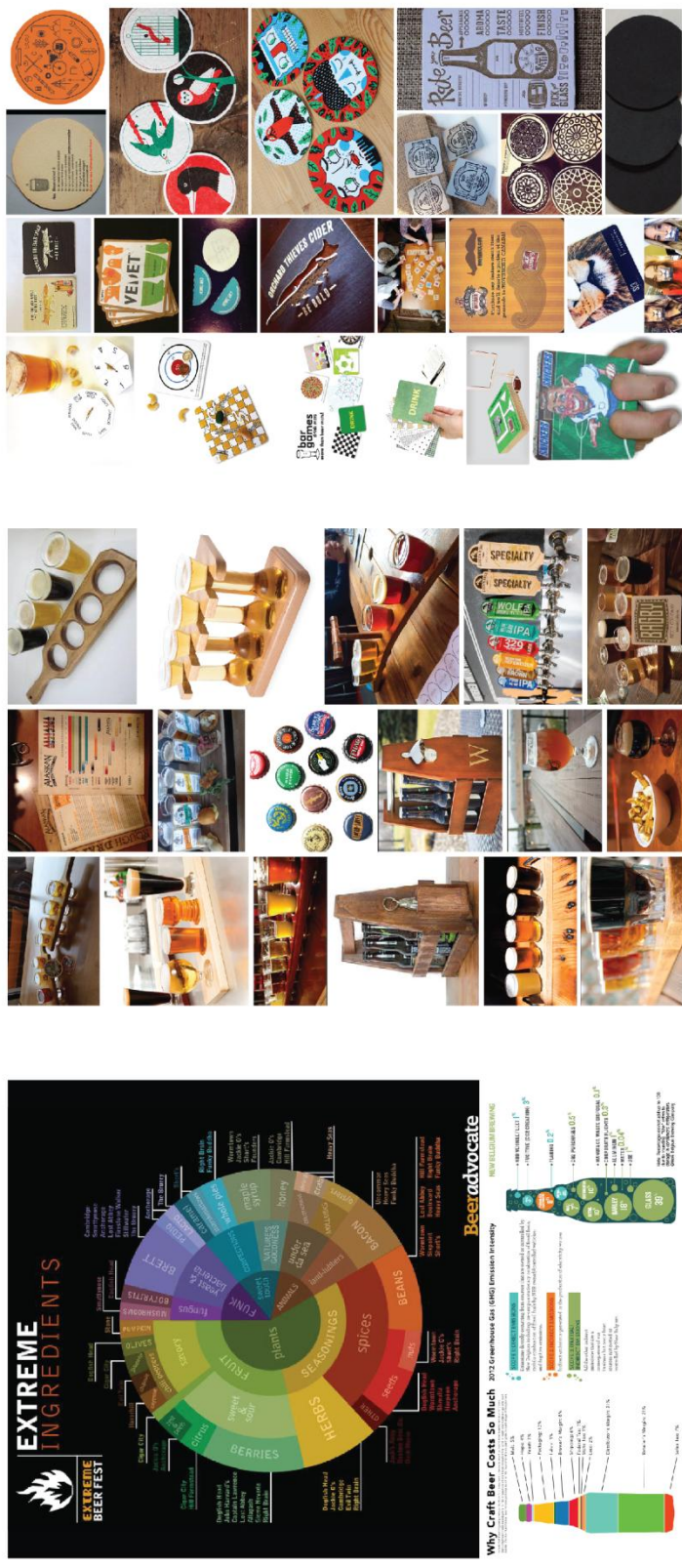
- Saturated Market - An explosion in capacity while demand is lagging. There is at least 1 craft brewery in every county now "if you think of the market 5 years ago people were excited and happy to hear your an Irish craft brewer, now it's just normal"
- Competing with the "big boys" - They can determine what beer goes into pubs through money and free cases, making it difficult to introduce craft beers. Counter measures are also rife with all larger brewers bringing out ranges of craft beers
- Difficulties in collaborating with other craft breweries "it's easier to work with brewers in a different county because we're not a threat - Even if you win every account in the county you're not going to be a preferable brand"
- Some "punters" are 'sitting on the fence' in regards to craft beer because craft beer might have a reputation of only been drunk by hipsters, and hence intimidating to people. "This problem is bigger in Ireland than other countries"
- UK Shipping is expensive
- Starting a business in Ireland is difficult. It is a small market and funding and business supports are not helpful, particularly in regards to businesses that are not technologically focused
- Conflicting opinions between the owners. The naming of the business is a source of contention and layer of complexity to the business.

Difficulties facing the business

Working Process and Environment	<ul style="list-style-type: none"> - Work without structure - Irish unprofessionalism - Doesn't visualise/externalise information
Offering	<ul style="list-style-type: none"> - No plan/Design for the brewery tour - No storytelling - Attempting to offer to all
Messages	<ul style="list-style-type: none"> - Logo/Brand name not clear - Poor picture presentation - No storytelling ie. playing on brand name and message - Not demographic focused
Identity/Purpose	<ul style="list-style-type: none"> - Not sustaining identity
Online	<ul style="list-style-type: none"> - Not strategic, all content goes everywhere - Poor picture presentation - Not personal or engaging
Value Network	<ul style="list-style-type: none"> - Lacks personal knowledge sharing - ingredients, how to cook these things, pairs - Difficult to collaborate
Knowledge Bank (R&D)	<ul style="list-style-type: none"> - No data collection

Table 6. Summary of difficulties facing Business C

Agents of Change - Business C



| Visuals to explain and compile information

| Inspiration for tours and picture presentation

| Inspiration for beer mats

Benchmark Beer Paraphernalia to offer inspiration and novel ideas relevant to their brewery
 Other AOC's given but not illustrated

- | An Analysis of the businesses Instagram history.
- | Benchmark profiles that create good content and pictures showing context, good lighting, food and beer, etc. are shown.
- | Concepts of their social media profile logo are demonstrated. The business logo for social media is not clear.
- | Definitions, Synonyms and novel information that aligns with the brand to facilitate future ideas and messages.

Fig. 31 Business C - AOC

4.2.4 Business D: Town Hydroponics

Business D is a town hydroponics garden that offers organic and exotic greens to local restaurants by bike. The owner began experimenting with hydroponics in recent years in the hope of providing his restaurant (place of work) with exotic, consistent, and organic produce. Last summer (2015) the first large scale hydroponics tent was developed and featured a rail (trough) system capable of producing 350 common root crops that were supplied to the owner's place of work through the end of the summer. Now a new tent has been developed, which features vertical hanging towers (increasing capacity and improving water distribution), and is capable of producing 1000 crops with a full 4 week turnaround (enabling 250 crops to be sold weekly). This system enables the owner to grow more delicate, exotic vegetables.



Fig. 32 Picture from field visit to Business D

Characteristics of the Owner:

- Hard-working, the owner works full time as a waiter and this is a side venture
- Passionate about his new career direction "They are my babies"
- Eager to share knowledge and experience of hydroponics, and enable people to grow their own produce
- Constantly in pursuit of improving the systems performance

- Despite being busy, the owner has lots of ideas for the future
- Involved with the community. The rainwater used is collected from a restaurant roof next door, the allotment he is located in is in a walled garden of apartments, restaurants and shops. Local restaurants are supplied with produce
- Advocates sustainability, reflected in organic produce delivered by bicycle

Goals and Motivations of the owner:

- Offer excellent produce in a novel, sustainable and consistent way to restaurants in town. He will never compete with supermarkets or large suppliers
- Increase presence in local restaurants in the near future
- Is and will stay totally independent - He does not want to expand too big; even though he "sees fantastic potential in what he is doing". It is a small money maker that he is passionate about and has little upkeep cost
- Early ideas about creating an open garden one day a week, similar to a small market. He feels the ability to come in, browse and pick your own exotic produce can appeal to many
- Grow awareness of hydroponics and enable people in urban areas to practice it. Developed an innovative and efficient fixture and system, from random household and garden products that he obtained in discount stores and has already given one to his friends for their roof terrace

"Thinking of developing a fixture that I could sell as a modular set for urban areas that can grow with soil or water "

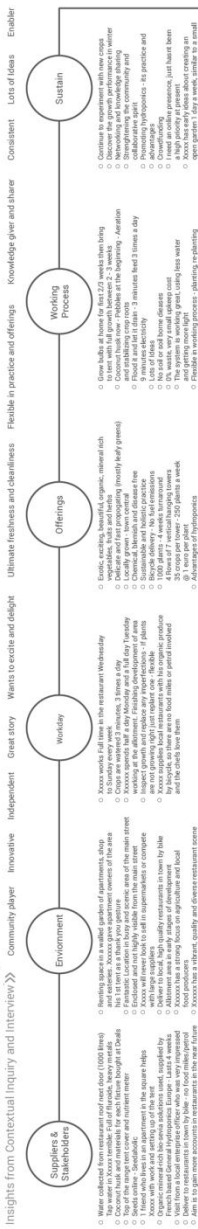
Frustrations and Pain points:

- Seasons can be difficult, after operating throughout the summer, the owner is apprehensive in regards to how crops will grow in the cooler winter months.
- This venture is almost a hobby for retirement that makes a small profit along the way. Because of these reasons the business lacks a social and marketing presence, branding and any working plan or strategy
- However, while it resembles a hobby for the owner, he also has many exciting ideas that he wants to develop in the future

Fig. 33 Business D - Mapping



Work Process and Environment



Customer Experience



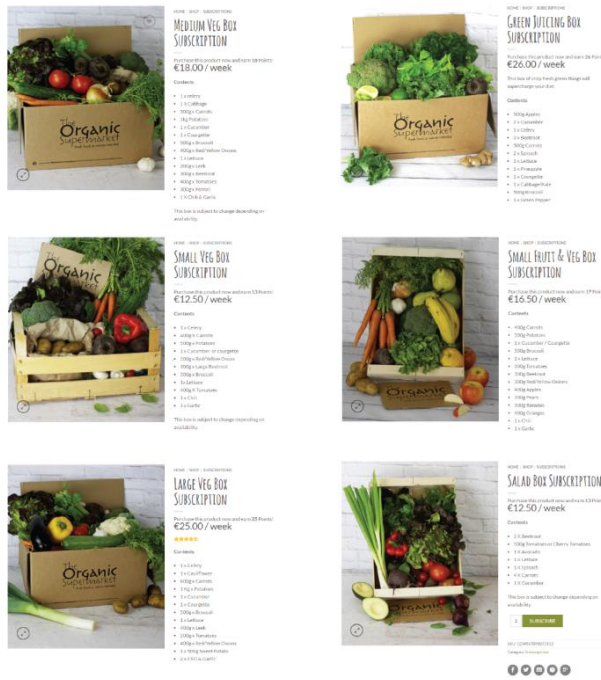
82

Difficulties facing the business

Working Process and Environment	<ul style="list-style-type: none"> - Does not adapt to new technologies ie. smartphone - Work without structure - Difficulties in communicating ideas / Making tangible
Offerings	<ul style="list-style-type: none"> - Does not categorise offering or storytell - Does not create experience through customer journey
Messages	<ul style="list-style-type: none"> - Does not storytell, showcase pictures and offerings - No branding - Not demographic focused
Identity/Purpose	<ul style="list-style-type: none"> - No identity - Relaxed purpose-not driven - Conflicting ideas on the future
Online	<ul style="list-style-type: none"> - No online presence
Value Network	<ul style="list-style-type: none"> - Lack of knowledge sharing - Poor communications - Does not engage with environment
Knowledge Bank (R&D)	<ul style="list-style-type: none"> - No data collection - Not able to print information

Table 7. Summary of difficulties facing Business D

Agents of Change - Business D



(The Organic Supermarket)

█ Benchmark business that offer fresh vegetables in a novel way. This includes the categorisation of vegetables into packages targeted at specific demographics and diets



(ohmyveggies.com)

█ Information in regards to the life date of fruit and vegetables to improve planning and work efficiency for the owner and give knowledge to the customer

Fig. 34 Business D - AOC

4.2.5 Business E: Exotic Mushroom Producers

Business E started as a hobby for the owner until his new hobby turned into a new career. The business is now a limited company with husband and wife co-owners. The business has developed a process for producing on average 1000Kgs of gourmet mushrooms per week. Up until very recently the majority of their produce has gone directly to local restaurants and to markets in Dublin and onto wholesalers. Last year (2015) they did a business development programme. This experience, has resulted in the business developing other value added products such as pates and dried mushrooms, and increased networking endeavours, social activity and branding.



Fig. 35 Picture from field visit to Business E

Working Characteristics of the owner's:

- Reliable and trusting, they deliver excellent quality handpicked mushrooms with a wealth of experience and unrivalled freshness "Our produce is pinned and in the restaurant on the same day. When mushrooms come in from Holland or France they are already 4 days old before they get to the kitchen"
- The enterprise do extensive networking and collaborating with other food producers in the county, including being regulars at tastings, fairs and festivals

- The value added range in shops and social side of the business is very new to the enterprise

Goals and Motivations of the owner's:

- Be the leading producer of exotic wild mushrooms in Ireland
- Increase the amount of varieties they produce and experiment with new specimens
- Promote local foods and producers in the region
- Grow awareness of exotic mushrooms and change perceptions of them
- Grow value added range and supermarket success

Frustrations and Pain points of the owner's:

- The growing process is very difficult and needs constant monitoring
- The grow tunnels are massively inefficient in regards to space and utilities. Mushrooms need a lot of heat, water and humidity
- There is no consistency in the output of each grow
- Weather has a big impact on the mushrooms tunnels
- Getting bored now want to grow different specimens. However, each mushroom needs a different climate and environment, and their tunnel set-up makes it very difficult to experiment with new varieties
- The owner delivers to restaurants locally, however he feels it is time consuming and not an efficient use of time
- "Some people just don't like mushrooms, even the regular looking ones"
- They have not been successful in shops to date
- While they are pro-active networking and growing awareness of local foods through Facebook and Twitter. They need to create more content around themselves and their offerings
- Their website is new but looks dated and has too much information

XXXXXXXXXX exotic mushrooms

Goals & Motivations | Grow awareness of exotic mushrooms | Produce exotic, delicate and beautiful mushrooms | Encourage healthy eating
 Change operators of mushrooms | Produce excellent quality exciting products for restaurants | Be consistent

Key Characteristics | Unsettling | Informative | Knowledgeable | Community player | Networking | Well-established customer relationships
 Unsettling | Informative | Knowledgeable | Community player | Networking | Well-established customer relationships

Frustrations & Pain Points | Distribution difficulties | Ambiguous pricing | Mushroom phobia | Low social presence
 Distribution difficulties | Ambiguous pricing | Mushroom phobia | Low social presence

Persona
 XXXXXX
 (43 & 45)
 (Driven by passion)
 Owners of exotic,
 mushroom producer

Output
 Exotic mushrooms
 Clean, organic produce
 Consistent product
 Promot, reliable delivery
 High-class restaurant produce

Means
 Product knowledge
 Deep knowledge
 Years of trial and error
 Well-established relationships
 Social media presence
 Innovative methods
 No chemicals and/or preservatives
 Communicative and responsive

Value
 Unsettling, informative
 Beneficial offerings
 Years of trial and error
 Well-established relationships
 Social media presence
 Innovative methods
 No chemicals and/or preservatives
 Communicative and responsive

Company Identity
 Unsettling, informative
 Beneficial offerings
 Years of trial and error
 Well-established relationships
 Social media presence
 Innovative methods
 No chemicals and/or preservatives
 Communicative and responsive

Work Process and Environment
 Insights from contextual inquiry and interview



History of Company

- 1998 - Started as a hobby for Xxxxxxx personal use
- 2000 - 3-4 years to perfect process of producing five different types of mushrooms
- 2001 - Started a partnership company run by Xxxxxxx
- 2005 - Became a limited company
- 2008 - Increased presence in XXXXXXX
- 2010 - Featured in XXXXXXX
- 2012 - Launched a new product line: Exotic Mushroom Fish Cookbook
- 2013 - Food Academy Programme, in collaboration with Supervall, Local Enterprise Board and Bord Bia
- 2015 - New packaging branding
- 2016 - Launch of new range of mushroom products
- 2017 - Maritime festival - first fair attended and launch to public
- 2018 - Getting bored now (Xxxxx) - want to experiment
- 2019 - The whole branding, marketing, customer aspect of the business is very new to XXXXXXX

Customer Demographics

- Restaurants/Markets - Primary
- XXXXXXX eaters - Farmers market
- Top-end in hospitality sector - Health food stores
- Operated in food retail
- Individual
- Foodies - Love to cook - Vegetarian
- Asian Population - Open-minded
- Triggers
- Meat Substitute - Strong flavours - Exciting flavours
- Cook authentic cuisine - Experiment with new foods
- Beautiful to look at - Low in fat and cholesterol
- Excite and create conversation - Nutritious Value

Product Offering

Fresh Mushrooms	Size
Grey Oyster	200g - 24 1kg - 12k 2kg
Golden Oyster	150g - 24 1kg - 14k 2kg
Pink Oyster	100g - 24 1kg - 14k 2kg
Shiitake	100g - 24 1kg - 14k 2kg
Beech	100g - 24 1kg - 14k 2kg
Forest Mix	100g - 24 1kg - 14k 2kg

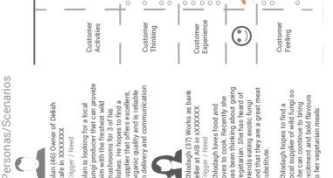
- Pasta
- Panini
- Salads
- Direct Mushrooms

Preparatory Fieldwork

- Research and market knowledge
- Competitors websites/Benchmarks

Customer Journey Mapping

Customer Journeys/Scenarios



Opportunities/Activities

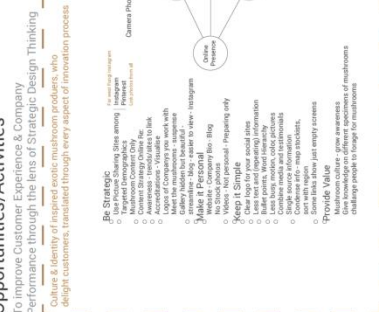


Fig. 36 Business E - Mapping

Difficulties facing the business

Working Process and Environment	<ul style="list-style-type: none"> - Inefficient working system - Works without structure - Doesn't visualise/externalise information - Inefficient use of time in delivering produce locally
Offering	<ul style="list-style-type: none"> - Not demographic focused - No storytelling - Does not create experience through customer journey
Messages	<ul style="list-style-type: none"> - Information overload - Poor picture presentation - No storytelling - Not demographic focused - Messages not personal or engaging
Identity/Purpose	<ul style="list-style-type: none"> - Not sustaining identity - No short term or long term plan
Online	<ul style="list-style-type: none"> - No personal and engaging - No strategic, all content goes everywhere - Poor picture presentation
Value Network	<ul style="list-style-type: none"> - Lacks personal knowledge sharing - ingredients, how to cook these things - Celebrate and communicate collaborations better
Knowledge Bank (R&D)	<ul style="list-style-type: none"> - No data collection R & D

Table 8. Summary of difficulties facing Business E

Agents of Change - Business E



Concepts that may optimise growing conditions and enable experimentation were highlighted



Data collection on the growth and variance of different mushrooms growing conditions to improve planning, mitigate risk and see patterns

Cultivated Mushrooms	Oyster Button	Shiitake Cremini	Maitake Portobello	Wood Ear Enoki		
Mushroom Tunnel						
		Ambient temperature	Relative humidity	CO2	Light conditions	Growing length
Grey oyster mushroom		15°C	90%	900 ppm	12 hrs/day 1000-1500 lux	
King oyster mushroom / Eryngii		15°C	90%	900 ppm	12 hrs/day 500-1000 lux	
Shiitake		15°C	85%	900 ppm		
Pom Pom Blanc		15°C	95%	900 ppm	12 hrs/day 500-1000 lux	
Nameko		15°C	95%	900 ppm		
Proppino		17°C	95%	1200 ppm	12 hrs/day 500-1000 lux	
Outside of the tunnel housed in climate-controlled Portakabins						
King Brown			17°C			
Chestnut mushrooms			18°C			
Enoki			8°C			

It was discussed that it may be beneficial to explore selling in health food shops and gourmet shops locally and in Dublin as it is an existing delivery route and these shops align with target demographics

Other informations included categorising information on the business website including menus and stockists and highlighting repeating information

Fig. 37 Business E - AOC

4.3 Synthesis of Case-Studies

This section illustrates the development of the core category and sub categories from field research which directs the Design phase of this thesis. Firstly, the core category is identified and explained. This leads to the identification of the sub-categories and three areas that all categories integrate into, that collectively make up the business. Further structuring of these categories suggests theoretical saturation. Following this a comparative analysis with industry knowledge (Monitor Deloitte, 2014) provides validation. With validation achieved findings from field research are explained based on the questions that emerged in the literature review. The broader context is also explored in line with the needs of these businesses and the methodology of grounded theory.

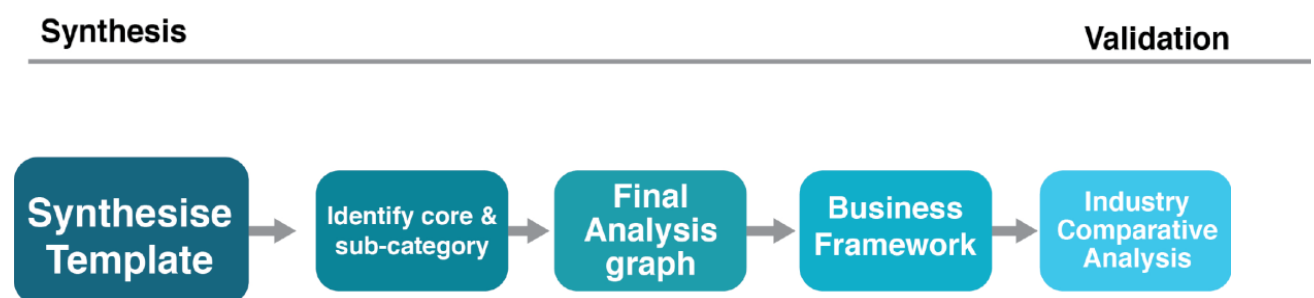


Fig. 38 Breakdown of synthesis

4.3.1 Core Category and Sub-Categories

Synthesis of field studies is initiated by the categories generated from the pilot study. These categories are illustrated in a template and facilitate the collection of difficulties in each business and where Design can add value. When data from the case- studies is successfully transferred to the template, the naming of sub-categories and core category is able to be identified. "A core category is the main theme, storyline, or process that subsumes and integrates all lower level categories in a grounded theory, encapsulates the data efficiently

at the most abstract level, and is the category with the strongest explanatory power" (Given, 2008). The core category of this research is identified as the;

- Identity and purpose of the business (Fig. 39)
 - The identity of a business is what/who the business is. It is directly related to the values of the business and owner
 - The purpose of a business why the business exists; the actual goal of the business

The core category being the identity and purpose of the enterprise, aligns with existing theory found in literature on innovation capability building. While Lawlor et al. do not include purpose or identity in their framework (Page 29), they assert "the glue that maintains this innovation system is the mindset or culture and values of the firm" (2015). Similarly, both Sisney (2012) and Neuimier, (2012) describe the need for a values based and future orientated organisation. In a complex system the purpose not only sets the direction, but suggests rules for behaviour and produces communities of action (Neuimier, 2012). Research highlights that in these small businesses, the business owners have difficulty in articulating and understanding what they offer, why they offer it and who they are as a business. Improving these understandings can provide a basis for all other activities.

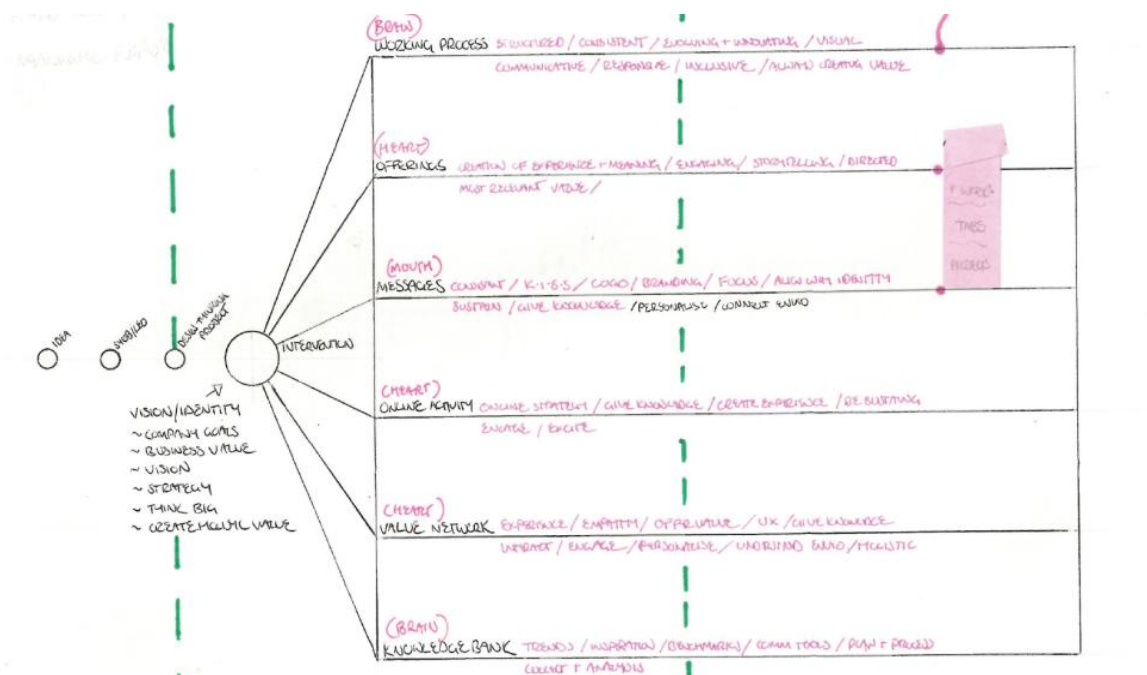


Fig. 39 Identifying the core category

All categories are additionally grouped into three areas consisting of the Brain, Mouth and Heart that collectively encapsulate the business (Fig. 40). The Brain of the business denotes the management and operational side of the business. The Heart is what the business offers in product and services and who it offers them to. The Mouth of the business is the external perspective of the business and how it interacts through branding, messages, communication and online activity. The grouping of the categories in this manner aims to articulate a relevant understanding of a business, targeted at demographics that do not have expert knowledge on business and management practice.

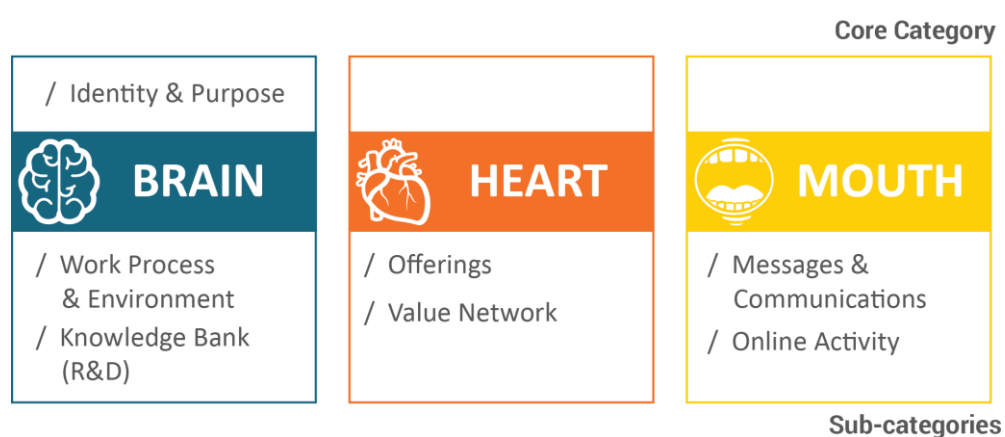


Fig. 40 Grouping of categories into areas of the business

Final synthesis of field data includes the illustration of all findings in a graph based on the three areas of Brain, Heart and Mouth. The number of categories within each group is expanded, resulting in fifteen categories (five categories within each group of Brain, Heart and Mouth), to ensure all findings are covered in analysis and future direction, to facilitate the comparative analysis between enterprises and depict an overall understanding of field data. Through further analysis and questioning of this graph the categories are restructured. Questions that facilitate this included:

- What, demands/will most likely need/can benefit from, a Design intervention?
- What is the Design intervention?
- Can categories be combined through this Design intervention?
- Will this approach work for the micro-enterprise?
- Does the overall structure make sense?

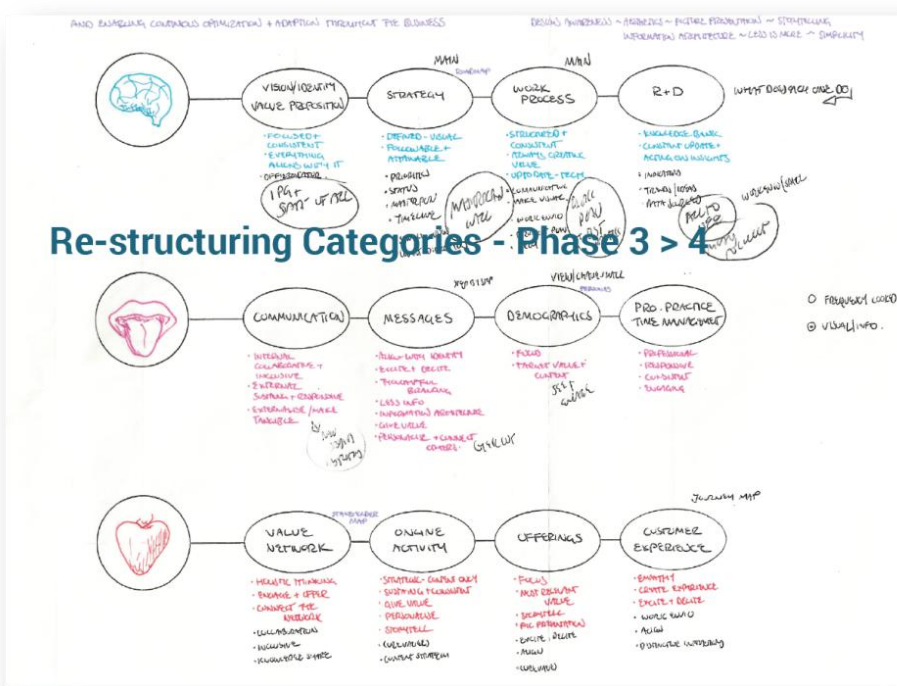
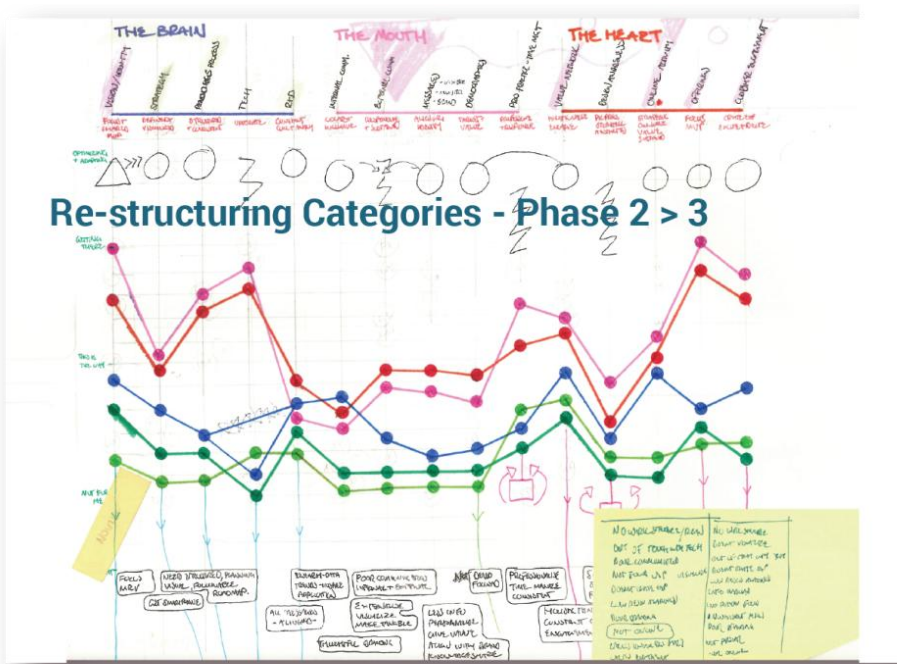


Fig. 41 Developing a graph and restructuring the categories

This approach results in the number of categories being reduced, firstly, to four in each group and then finally four categories in the Brain, three in the Heart and two in the Mouth of the business. The process of re-structuring the categories is found on Page 94 (Fig.42)

The Development of Categories to Develop Theory

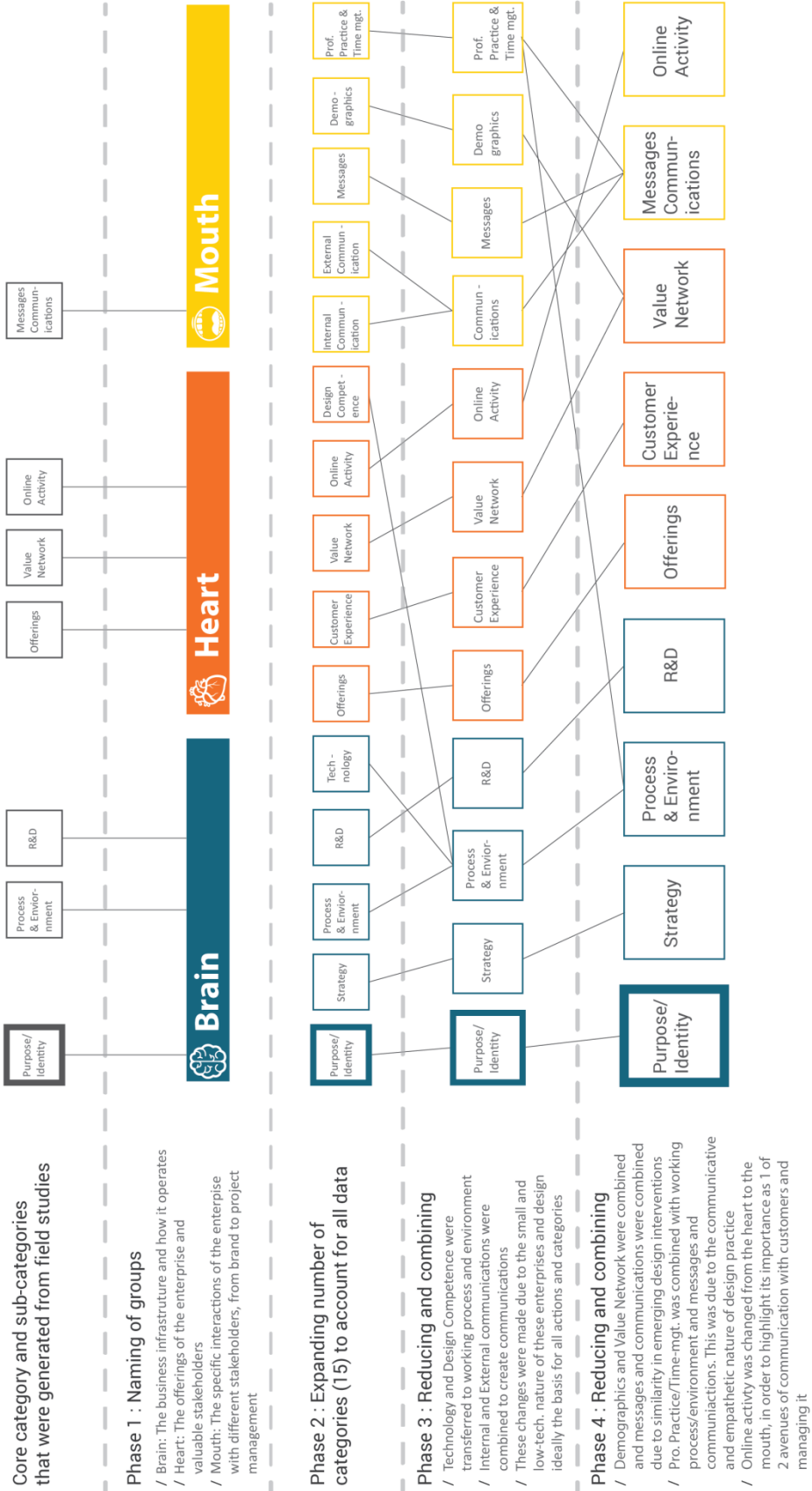


Fig. 42 The process of developing categories

The final development of the core category and sub categories enables theoretical saturation of field research. This results in the generation of the final framework which encapsulates the businesses in regards to the areas of difficulty they face and where Design can create value and be managed (Fig. 43).

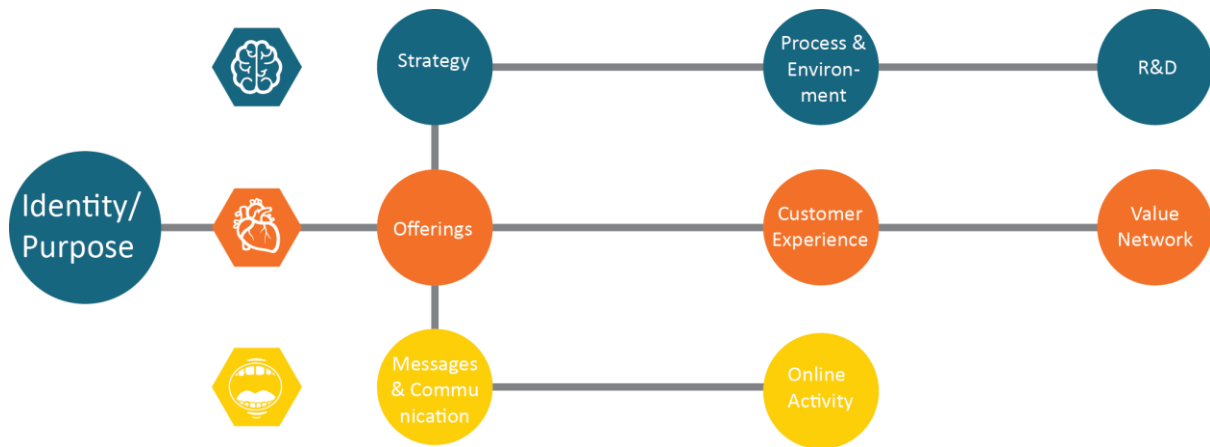
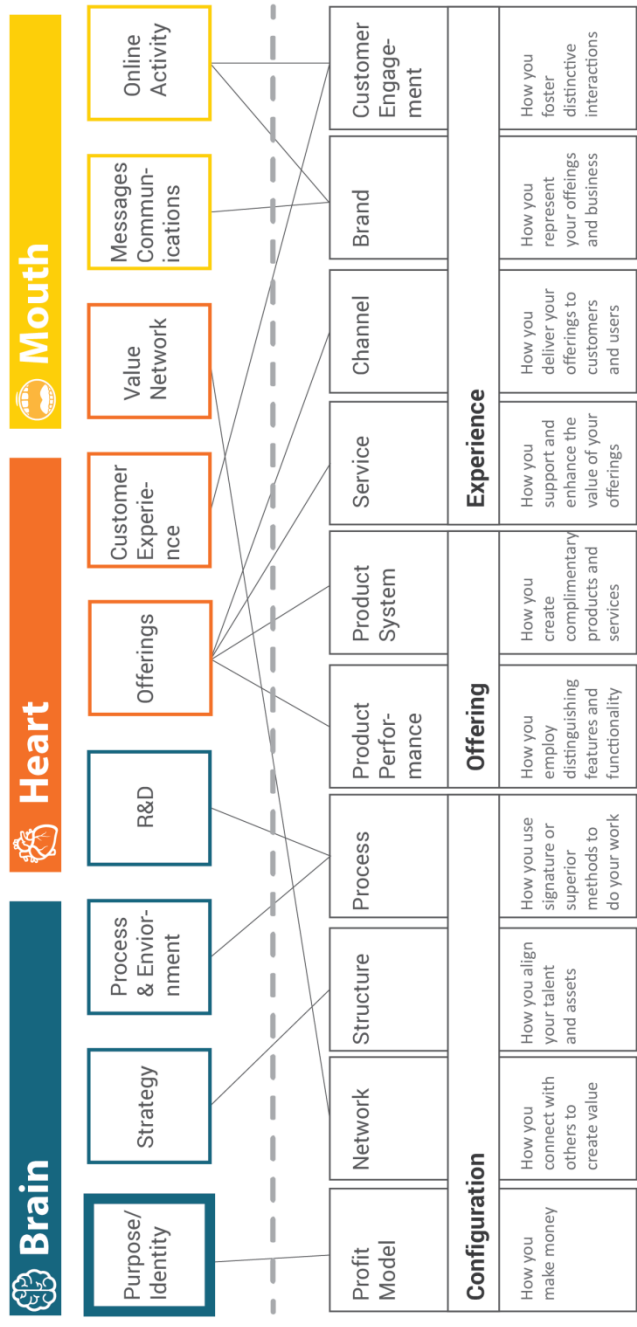


Fig. 43 Final business framework

A Comparative analysis with Doblin's ten types of innovation framework (Monitor Deloitte, 2014) validates the final framework of enterprise analysis. This comparative analysis can be found on page 96 (Fig.44). The outcome of synthesising case-studies includes;

- A graph highlighting overall findings and areas of difficulties for each business (This graph will facilitate explaining their difficulties in the next section)
- The final framework illustrating the core category as the identity and purpose and sub - categories that encapsulate the enterprise in regards to areas of difficulty and opportunity for Design

Industry Comparative Analysis



DOBILIN, 10 types of Innovation Framework
 (Neilnitte Global services limited 2014)

Fig. 44 Comparative Analysis with DOBLINs 10 types of Innovation framework

4.4 Findings from Field Research

This section summarises findings from field research. Firstly, insight generated in gaining participation with businesses is discussed. Then the four questions that directed field research are explored. The section concludes by exploring the broader structural context of industry in Ireland.

4.4.1 Gaining Participants

It was identified during field research that Design is best sold initially as a knowledge generation tool: By investigating the business through a Design perspective, a fresh understanding of the business can be created. This can include opportunities and insights being uncovered in regard to the customer experience, working process, identification of trends, patterns, and ways of understanding their world.

Successful participation for the pilot study further strengthened a theme of the project; that the culture of the owner is crucial to the desire and success of Design within it (Wolf, 2011). The business map generated from the pilot study coupled with a broader articulation of Design, enabled the participation of other businesses. Additionally the narrow scope of the study focused within one regional town, improved success in gaining participants. This is reflected in referrals positively influencing two of the case-studies undertaken. Other important points discovered throughout the process of gaining participants include:

- New businesses are more open to help and the introduction of new practices
- The researcher must show genuine interest in what the business do, including encouraging and empowering them in their endeavours

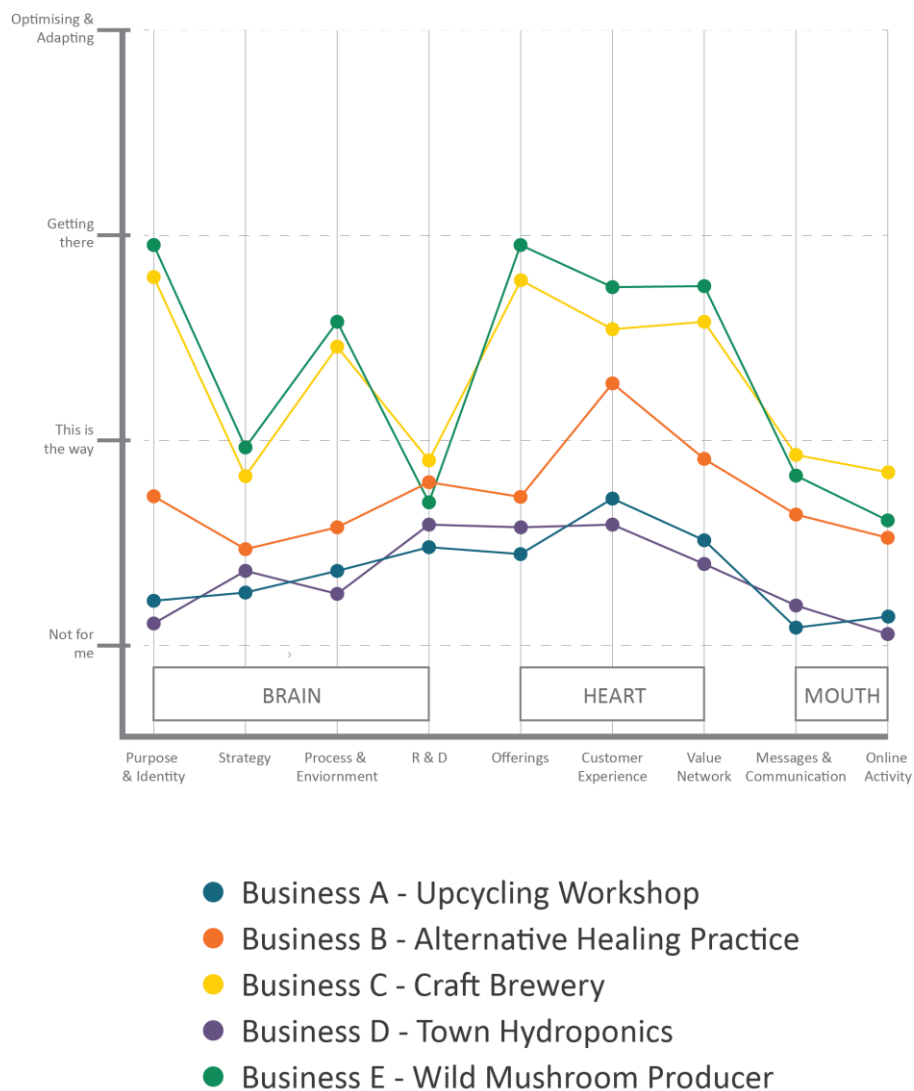
4.4.2 The Culture of Micro-enterprises

All businesses explored are completely different in their offerings and way of working. However, there are clear patterns between these businesses and their owners.

- Each business is directly linked to the values of the owner. Consequently these owners have extensive knowledge in their area of expertise and are passionate about their work; the business is a huge part of their life
- Regardless of offerings or industry, each business is aiming to grow awareness of their offerings and industry and change perceptions
- All business owners have many ideas for the future and are trying to expand. Even business D who aims to stay small, declared lots of ideas for future growth
- Each business aims to be as independent and autonomous as possible
- The owners are accommodating and never say no to a challenge or request
- Regardless of offerings or industry, each business is heavily seasonal dependant
- These businesses are under considerable time and money constraints

4.4.3 The Difficulties of Micro-enterprises

This section discusses the difficulties facing the businesses building on the final business analysis graph (Graph. 2). Each category will be discussed in regards to what interpretations were in measurements (best practice), followed by evaluating the businesses and highlighting the main difficulties they face. Analysis aims to give an overall understanding of field data, but relate to examples found in case-studies to provide sufficient evidence.



Graph. 2 A snapshot of all findings from field research

Core Category - Purpose/Identity

Perspective of best practice

- Is it visible?
- Is it defined?
- Is it compelling?
- Is it focused?
- Does it offer the relevant value?
- What is the key selling point?

Findings

All business owners have difficulty in articulating what they do, why they do it, and what the values of their business are. These owners are heavily invested in their business on a day to day basis and often work in isolation. Consequently it can be difficult to sustain and motivate themselves to in articulating and realising longer term visions. Businesses C and E have an ambitious vision and excellent offerings, however, they fail to visualise it and translate it through other aspects of their business. On discovering findings from the business mapping, business B was surprised and excited that her personal values and identity were being incorporated with the business "cool, never did this stuff on the start your own business programme that I did". Without a clear purpose articulated based on the owners values and identity, businesses A and B in particular suffer from offering too much, resulting in their messages and activities being unclear and lacking continuity.

Strategy

Perspective of best practice

- Is it known?
- Is it visual?
- Is it attainable?
- Does it always create value?
- Are their short term and long term targets?

Findings

In the same manner as *Purpose and Identity*, these businesses have difficulty in strategic thinking and visualising future ideas. Additionally, as business D illustrates, their remains conflicting ideas of the future within these businesses in regards to the messages they are

sending and future ideas they are having. While all have big plans and many ideas for the future, they lack planning and visualisation capabilities to investigate their potential or how they may be implemented, resulting in many ideas without action.

Work Process and Environment

Perspective of best practice

- Is work structured?
- Is it planned?
- Are technologies used to optimise the business performance?
- Is the work environment inclusive and communicative?
- What is the awareness and use of Design?

Findings

All of these businesses work without structure and planning and instead work on a "do what has to be done basis". The owners often work in isolation and remain busy with usual tasks, diminishing time for new plans and visions. This makes their work more re-active rather than pro-active. Regardless of industry, all businesses highlight difficulties in communicating information and making ideas tangible. One factor in this is the unwillingness to adapt to new technologies. Business A, B and E all operate without a smartphone. However it was found that using a smartphone can add significant value to their business in regards to business awareness and project management. A similar theme was evident in business A and C, here the difficulties in time management and professional practice of small business owners was evident. All lack expert Design knowledge and competencies.

R & D

Perspective of best practice

- Is there R&D and signs of pursuing innovation?
- Does the business search for insights?
- Is there data sources that are known and used?

Findings

These businesses lack basic R&D and insight creation, and are more focused on present tasks and objectives than imagining and integrating new ones. Additionally, while most of the businesses are online for their specific needs, they do not seek new sites or search for inspiration on a regular basis. Moreover, while business A would like to, and business E undertakes research at times both do not have the tools and technologies to print, compile, synthesise and share information.

Offerings

Perspective of best practice

- Are they aligned with identity and purpose?
- Are offerings clear and giving relevant value?
- Are they demographic focused?

Findings

As discussed previously these businesses lack a clear and compelling purpose. Consequently many of the enterprises lack continuity and definition in their offerings. Business A and E illustrated that they are not demographic focused. Business C discussed that her business does not reflect her demographic. Business E, although are successful and have excellent offerings have not explored health food and gourmet food shops, which research highlights aligns directly with their target demographics.

Customer Experience

Perspective of best practice

- Does the business create experience throughout the customer journey?
- Does the business excite and delight their customers?
- Does the business engage with empathy?

Findings

Businesses find it difficult to understand other aspects of a customer journey besides their core offering. Business A, B, and D do not create an experience for the customer in the place of business. Business C lack planning and structure to optimise their brewery tour experience. These business have difficulties in communicating which is evident in project

management and the lack of empathetic and emotional engagement. They do not actively seek insight from their customers.

Value Network

Perspective of best practice

- Does the business engage and interact with the customer?
- Does the business connect with and promote other businesses and community activities?
- Does the business know their stakeholders and holistic environment?

Findings

Collaboration between micro-enterprises is vital. The SE region of Ireland showed significant increase in networking, collaboration and celebration of small local enterprises which is reflected nationally (APJ 2015-2017). In this study enterprise B, C, and E show that they are true community players, however these collaborations need to be celebrated and communicated better. Additionally enterprise A and D show signs of a siloed practice, they are heavily focused on their activities and busy schedule, however they could create significant value by collaborating with their surrounding environment.

Messages and Communication

Perspective of best practice

- Are they aligned with identity and purpose?
- Is their branding reflective of the business?
- Do they share industry knowledge?
- Are they collaborative and inclusive?
- Are they responsive?
- Are they targeted at a demographic?

Findings

Without a clear purpose and identity these businesses lack continuity in their messages and communication. Business A, B, D and E either did not worry about branding or are not happy with. Moreover, while business C has, and understands the importance of branding, they find it difficult to sustain their messages and story. Business C discussed the difficulties in working with other businesses at a professional practice and time management level. These

businesses have difficulties in both internal and external communications, marketing deficiencies, and often work in isolation.

Online Activity

Perspective of best practice

- Is the business active and sustaining online?
- Is it strategic online?
- Does it excite and give value online?
- Does it share good images?

Findings

While all of these businesses are online at a social level, with the exception of business D. They still face significant difficulties online. Reflective of previous categories, these businesses suffer from a clear message and continuity in their offerings. While business B, C and E consider themselves active on social media sites, they do not engage at an empathetic level, share personalised messages or incorporate their environment. Additionally, they suffer from the lack of basic Design knowledge such as good image presentation, adding context and storytelling to their offerings and information architecture. The approach of business B and E in updating content is to put everything everywhere, resulting in oversaturated streams, repetitive visuals and no order to focus emphasis. Finally, although businesses B, C and E are online regularly, the core website of each receives the least amount of attention, resulting in them looking dated and inactive.

The following table (Fig. 45) offers a summary of the main difficulties these micro-enterprises face.

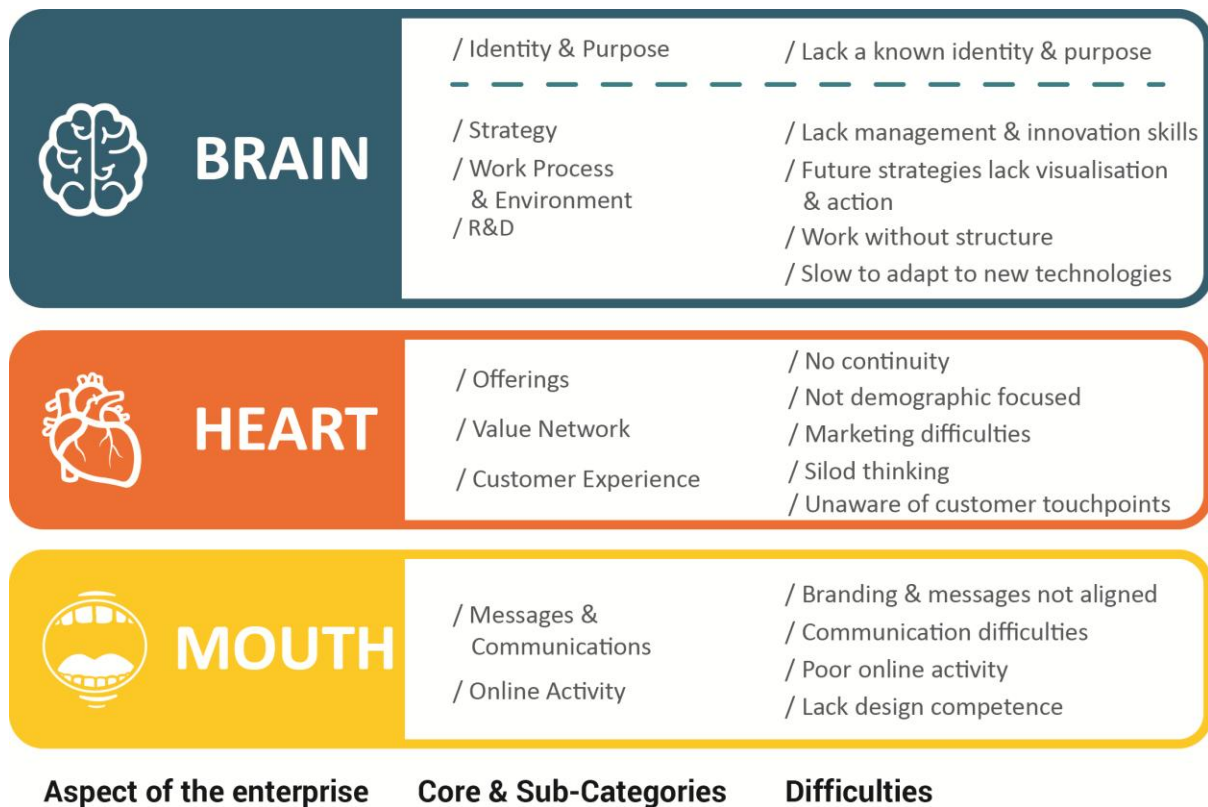


Fig. 45 Summary of difficulties facing the enterprises

4.4.4 DT and the Micro-enterprises

DT is a strategic tool practiced by Designers to understand and frame complex situations. DT directly compliments the core category of this study the purpose and identity of a micro-enterprise. DT can build understanding of the purpose and identity of a micro-enterprise by enabling them to understand their whole environment, valuable stakeholders and most relevant future. Moreover, DT can create a future that is built on the personal values and interests of the owner, resulting in longer term visions that the owner is invested in and hence more inclined to sustain. These factors contribute to the mitigation of future risk and provide a concise basis that inspires and facilitates micro-enterprises in growing awareness of their business, sharing messages and aligning future activities.

4.4.5 A Design-led approach in the Micro-enterprise

A Design-led approach directly compliments the difficulties of micro -enterprises. The benefits that a Design-led approach can have will be explored through the groupings of the Brain, Heart and Mouth of the business developed in Chapter Four.

Brain - Work Process and Environment / Strategy / R&D

Design is an explorative, iterative process of identifying opportunities and creating and evaluating innovative solutions (Herbert, 2014). Design is data driven with the intention of offering broader value creation (Liedtka, 2013). Consequently the application of Design can directly improve the strategic, planning and structural aspects of a micro-enterprise. All of these businesses are season dependant. Improved planning can enable micro-enterprises to optimise their performance and align their activities with the season, resulting in adaptive enterprises that are always creating value.

Adopting a Design- led approach can improve innovation and creativity in the enterprise This is achieved by promoting an inclusive and creative environment, embracing ambiguity and diversity, using technologies to optimise performance and mastering the tools of design to visualise and communicate ideas. These competencies can improve both the internal and external communications of the enterprise, the management of projects and enhance abilities to visualise, develop, and test new plans and ideas.

Heart- Offerings - Value Network - UX

Design aligns all offerings with the shared values and identity of an enterprise. Design utilises storytelling, combinations, and categorisations to create and share novel ideas regarding these offerings. Design is holistic in orientation, it identifies all stakeholders of the business and initiates engagement with them. Design aims to offer broader value creation for all stakeholders in the form of sharing industry knowledge, collaborations and good internal and external communications. By focusing on the user and larger environment Design can find insights and create a closer connection with stakeholders. This can benefit the difficulties found in project management, time management and professional practice

from an empathetic and a communicative perspective. The main aim of Design is to improve the customer experience throughout each aspect of their journey, by systematically researching and bringing user needs into their process, Design can be the catalyst in creating new markets and mitigating risk by creating the correct solutions (Heskett, 2005).

Messages and Communication - Online Activity

As described previously the purpose based approach and shared identity that Design offers, enables attitudes, messages and offerings to be consistent and clear. Design then utilises aesthetic consideration, thoughtful branding, information architecture, a less is more attitude, storytelling, personalisation, collaboration, context and empathy to create conversation and novel messages. Online Design operates with the same inclusive and strategic intent, offering value and relevant information and promoting other businesses and surrounding environment.

4.4.6 Design, DT and the broader structural context

Design directly compliments national strategies in improving the customer experience, moving to e-commerce and the management , innovation, and marketing weaknesses in SMEs found previously in the literature review and field research (APJ-SE 2015-2017; IMI, 2010). There are clear alignments with DT and strategies being implemented nationally. DT is multi-disciplinary and integrative and hence offers significant value to any networking, collaboration, entrepreneurial and knowledge building activities. In these contexts, DT can integrate diverse information and expert knowledge, offer a holistic perspective, make connections and provide visual models and shared visions.

Looking at the more focused perspective of individual enterprises, DT aligns with the emphasis on entrepreneurial activity and attempts to expand existing businesses in the recent APJ. In these instances DT can be used as the strategic tool at the inception of a business or challenge, or the agent of change in rejuvenating existing businesses. Here, DT

differentiates itself from traditional business consultancies and models by taking a human-centred, values based and holistic approach, actively seeking new and novel ideas, and broader value creation. DT can also help in community and regional building and social enterprises as described in the APJ-SE. Design interventions looking at the immediate and broader opportunities will be discussed in the next chapter

4.5 Conclusions

This chapter demonstrates the process of field research data and analysis. This process includes qualitative research in five micro-enterprises with the objective of gaining an understanding of their culture, difficulties and possible opportunities for Design. Categories generated from the pilot study, provide a template which facilitates the collection of other field studies and a basis for synthesis. Further restructuring of these categories enables the development of the final framework which is validated through a comparative analysis with Doblin's innovation framework. The final framework highlights the different areas of the business as the Brain, Heart, and Mouth of the business, the core category as the purpose and identity of the micro-enterprise and sub-categories where Design can create value and be managed within it. Consequently, building on knowledge gained in the literature review research asserts that DT can build the understanding of a micro-enterprises purpose and identity, and additionally be the catalyst in cultural change and desire to adopt a Design-led approach. A Design-led approach can offer significant value to micro - enterprises as it directly compliments their difficulties in operating.

5.0 Design Intervention

The previous chapter demonstrated that DT can build understanding of the identity and purpose of a micro-enterprise and initiate the adoption of a Design-led approach. It was highlighted that adopting a Design-led approach can significantly improve the operations of these enterprises (Hodbay et al. 2012). These findings direct the study to the development of two distinct but directly related Design interventions (Fig. 46). Firstly, a method titled "Ecology Mapping" is developed. This consists of a series of four workshops with a real business where DT develops understanding of the business identity and purpose for the owner. The second intervention stems from achieving these understandings. It develops and recommends documents derived from the categories in the final framework that can facilitate a micro-enterprise in engaging with a Design-led approach over time. Additionally the broader structural context will be explored. In this exploration the value that DT can offer other industry and innovation endeavours nationally will be discussed. Infrastructure needed to grow and sustain a Design-led approach within micro-enterprises will also be recommended.

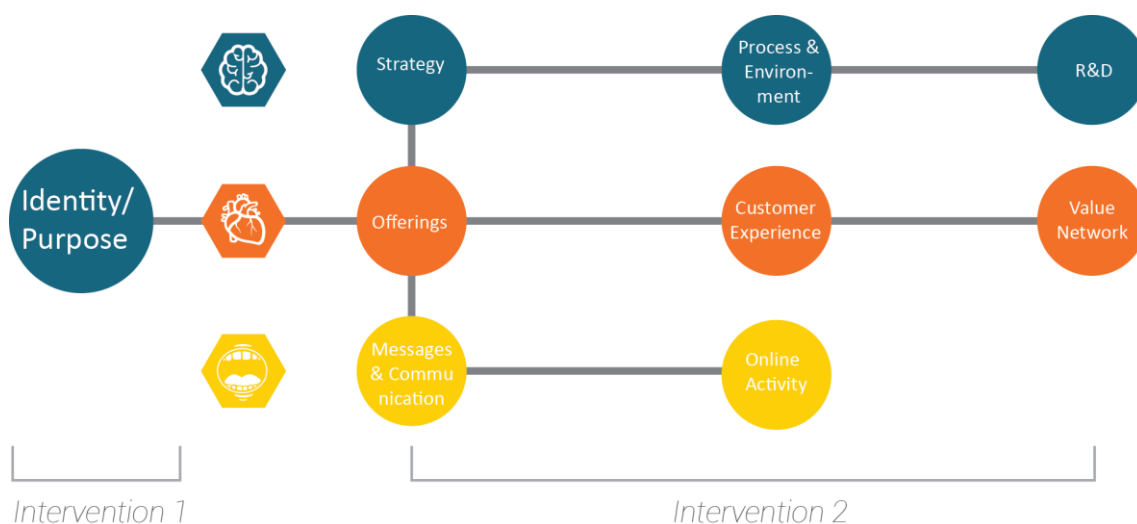


Fig. 46 The development of two Design interventions

5.1 Ecology Mapping

The "Ecology Mapping" is developed with the objective to facilitate a micro-enterprise in understanding and articulating their identity and purpose. The "Ecology Mapping" is named so for two factors, firstly, ecology intends to reflect the integrative and living nature of the business, secondly, mapping emphasises the visual and action orientated nature of the process. The "Ecology Mapping" reflects an action research project, but is driven by DT. DT directly compliments the overall objectives of the project in building understanding of the identity and purpose of the enterprise based on the owner's values, and expressing a strong story through visualisation.

By including the people who will ultimately implement the strategy from the beginning of the project , we ensure not only are they actively involved in understanding and defining it, but also that they are passionate about it and strongly committed to seeing it come to fruition

(Holloway, 2009. P.55)

The planning for the ecology mapping is explorative and consists of two phases including:

- Design of the Ecology Mapping
- Design of the Final Visualisation

5.1.1 Design of the Ecology Mapping

The Design of the "Ecology Mapping" is initiated by the experience obtained from the collection of data from field studies. This experience enables the creation of a hypothetical sequence of the process. The hypothetical process includes eight stages. Within each stage the intent of the team at designCORE and documents and methods that can facilitate knowledge transfer are illustrated. A breakdown of the intent at each stage follows, the full process can be found in Appendix E.

- **Client meeting**
 - Understand the owner's intent, objectives and problems in their own words.
- **Plan Research**
 - Explain the plan and scope of the project, choose team roles for research
 - Map early stakeholder, cultural map
- **Collect Data and Share**
 - Collect 360 info, investigate online presence,
 - Seek product service feedback if possible
 - Understand market and competitors, trends and best practice
- **Visit Business**
 - Understand their world, operations, personalities, challenges, stakeholders, communications, environment
- **Pool Findings**
 - Discover insights and areas for opportunity
 - Form holistic understanding of business and challenges it faces
- **Internal Mapping**
 - Create a clear and compelling story
 - Understand which methods are relevant
- **Workshop**
 - Orchestrate and take the owner through the story, motivate and empower them
- **Frame**
 - Create a mission statement for the business and focus the owner towards a future direction their invested in

The rationale for developing this process is twofold. Firstly, it allows the collection of methodologies, graphs and visuals that may facilitate the primary objective of developing understanding of the businesses purpose and identity for the owner. Secondly, it improves understanding of the process for the team of Designers located in designCORE. It is critical that the "Ecology Mapping" be an inclusive and co-creative process with a diverse mix of perspectives and expert knowledge. "The best practice in Design research is to integrate people from different backgrounds into a Design research team" (Lojacono and Zaccai,

2004). A workshop based on the emerging process enabled the team at designCORE to interact with the planning of the process and improve understanding of the project. The stakeholders from designCORE offered expert knowledge from areas including Design management, Design engineering, Graphic and Web Design and Policy Design. This knowledge strengthened the process and improved validation.

While the duration of the "Ecology Mapping" is unknown, the result intends to deliver a clear and compelling story that enables understanding of the businesses identity and purpose for the owner. DT will build this understanding by illustrating the business environment from the broadest perspective and narrow the business owner's focus throughout. This will be achieved by the iterative generation of visuals, information and methods during workshops, constant refinement of information between workshops and reflection promoted throughout, to transfer knowledge and further the process. Information generated will be offered as take home documents and a final package is Designed to further transfer knowledge.

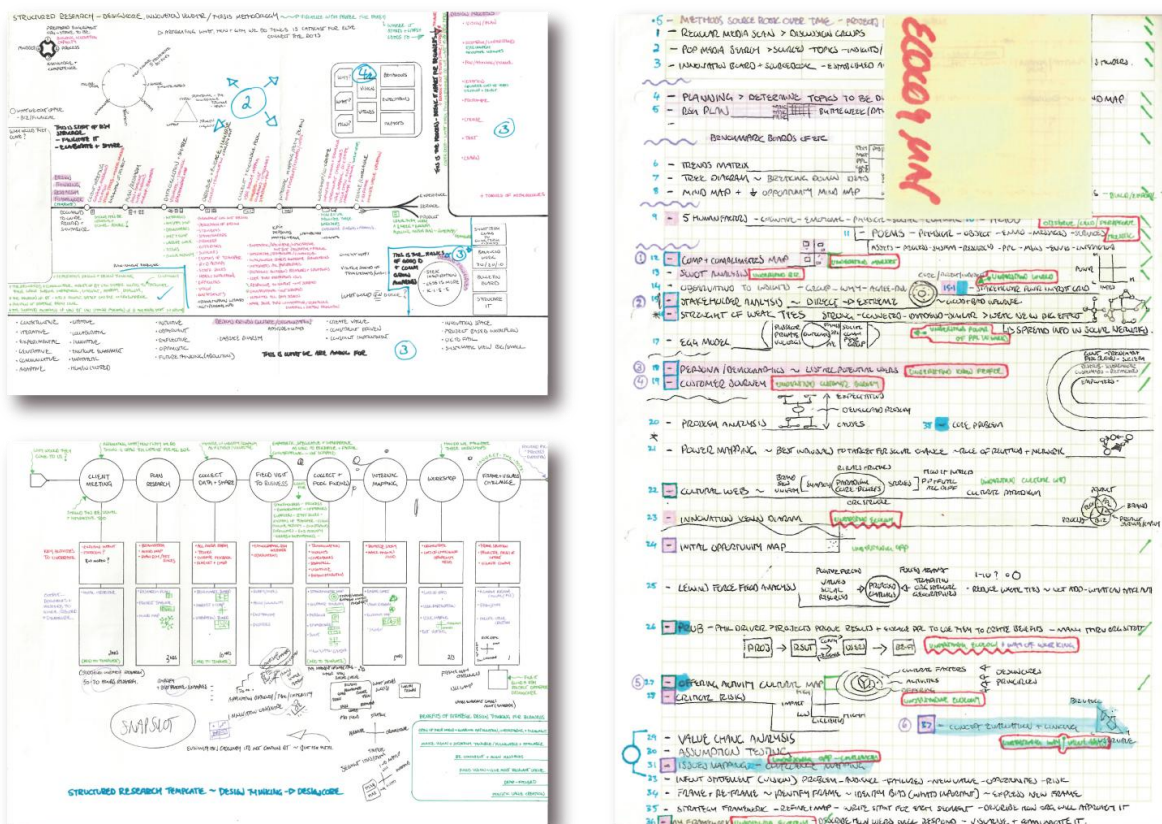


Fig. 47 Ecology Mapping planning, sequence and methods

5.1.2 Design of the final visualisation

It is critical that the final visual be clear and compelling. Just like the mind map as described previously, the inclusion of colors and imagery boosts creativity and imagination. It also invites engagement and gives time for reflection. The objective of the visual is to depict the whole business and its environment. Concept visuals are developed to see if it is possible to visualise this information and what the information may be. This was commenced by:

- Selecting a business from field studies (business E)
- Creating a map which incorporates a cultural activity and factors map. This map placed the business in the centre followed by their values and offerings, then the activities and broader cultural factors that are related to these values (Fig. 48)
- Another map created concurrently investigates the internal and external stakeholders of the business
- Both Maps are combined to build relationships and stories (Fig. 49)
- This information is translated to a single page visual. The structure of this visual illustrates the company, the company identity and their offerings and related values. Stemming from this the different stakeholders and relevant cultural factors are explored (Fig. 50)
- Iterations of this visual are developed until the outcome is satisfactory in demonstrating a compelling story of the enterprise, and being replicated with other enterprises (Fig.51)

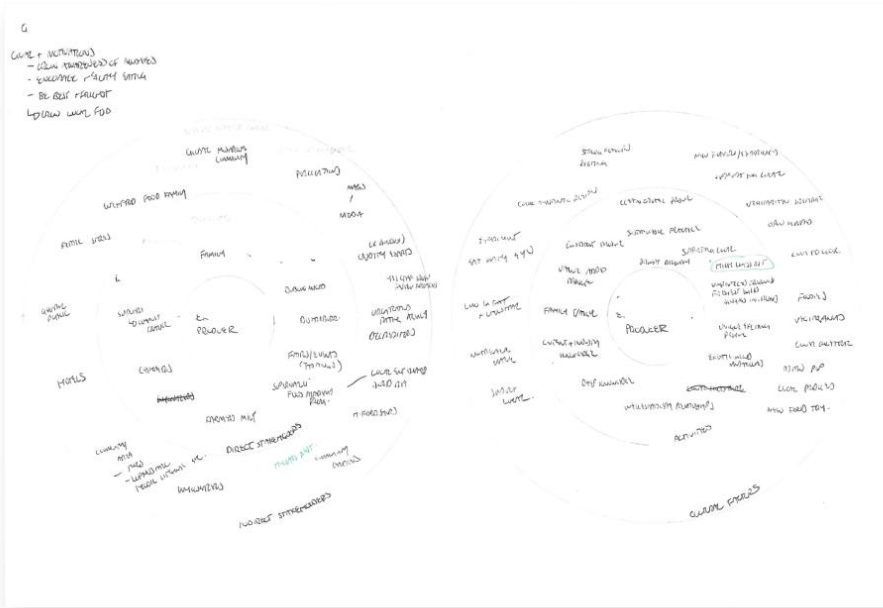


Fig. 48 Creating a cultural activity map and stakeholder map

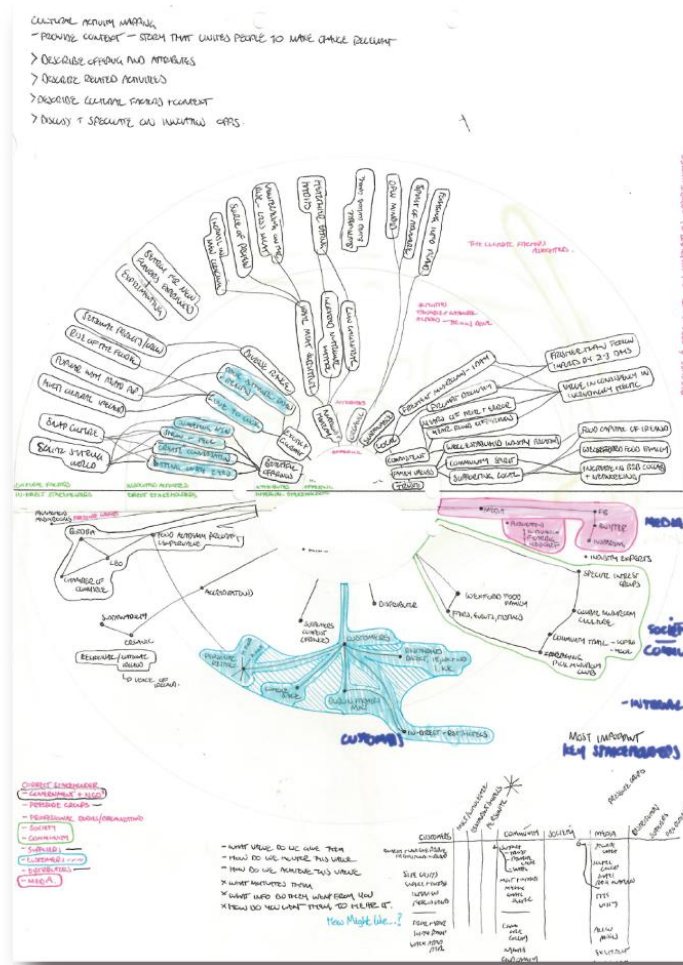


Fig. 49 Combining both maps to discover relationships

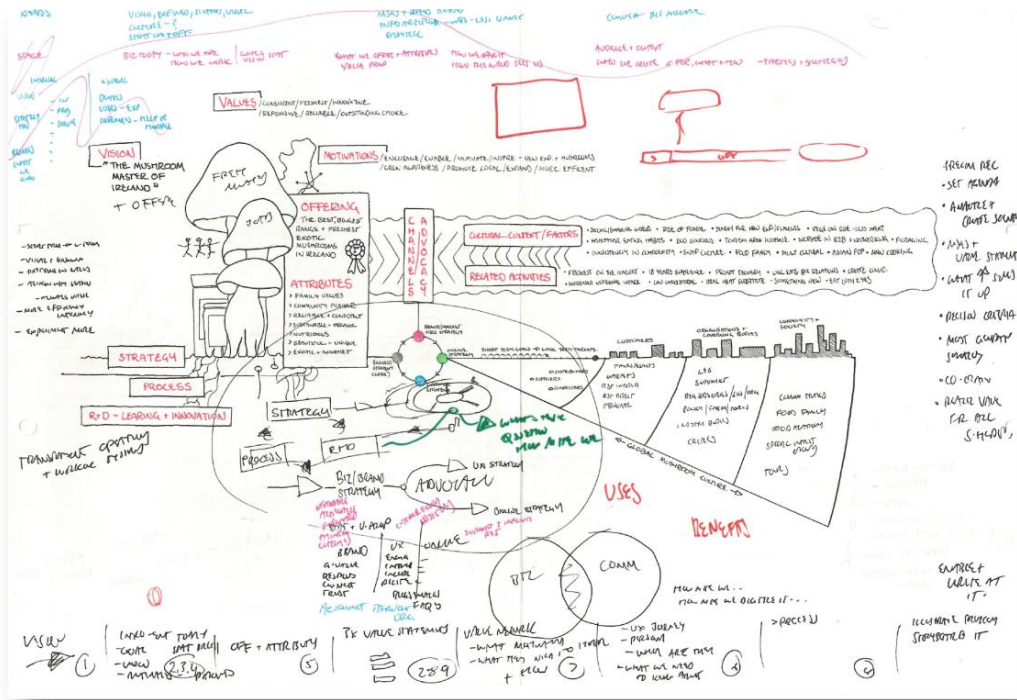


Fig. 50 Translating information to a single page visual

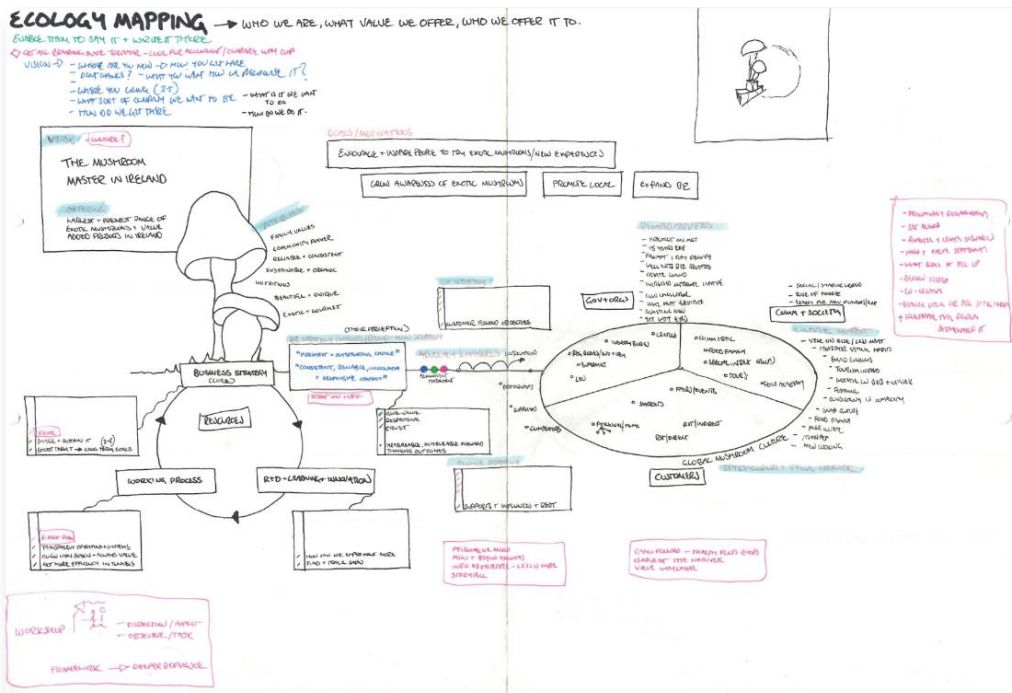


Fig. 51 Final iteration of visual

5.2 Ecology Mapping Delivery

5.2.1 Participant

Based in designCORE at The Dargan centre in the institute of Technology Carlow enabled application of the 'Ecology Mapping'. Enterprise F came to designCORE with ideas of further product development. After initial conversation with the owner, it was clear he did not have a good understanding of his intentions and additionally he explained that he had become rather disillusioned with the business. Consequently, it was explained that the 'Ecology Mapping' could offer value to the business by exploring the businesses environment, personal motivations of the owner and facilitating the owner in articulating a reinvigorated purpose and identity for the business. The ecology mapping with business F proceeded on the 8th of November 2016 and encompassed a weekly two hour workshop for four weeks.

Business F is a family business established in 2010 after finding a niche market opportunity. The businesses original product was a unique Design targeted at early years and special needs education, to enable them to teach themselves musical instruments and aid in the enhancement of social and motor skills. This offering ceased production in recent years for a number of factors including manufacturing, distribution and logistical factors. The business have tried to build on other offerings since. However, this shift has resulted in the business now offering a diverse selection of products and as a result there has been a subsequent loss of company purpose, identity and affection. Early conversation and secondary research highlights the business has difficulties in engaging with customers online and offline, the business do minimal marketing, networking and lack any online presence with the exception of their website.

5.2.2 Ecology Mapping - Workshop One

Objectives

- To discuss, articulate and highlight the broader values of the business
- To broaden the owners understanding of possible areas/contexts where the business can offer value
- To discover the future motivations and past pain points of the owner

Planning

- Map possible context areas
- Understand the different value attributes of the business
- Relate cultural factors and activities to these attributes
- Research the online activity of the business

Process

During the workshop the attributes and values that the owner as an individual and Business F as a company offers are discussed, along with past pain points and future desires. The business is then broken down into a variety of value propositions. These are then related to a diverse scope of possible contexts and cultural factors. A broad value offering of the enterprise is then generated followed by a group reflection on the process.

Social activities in private and public spaces

Conclusions

The owner is open to change. It is clear that the enterprise is not fulfilling his needs and he is disillusioned selling and pitching to institutional settings such as schools. The core theme from the workshop is the social values of the business and owner and it is evident by the end of the workshop that the owner already had a brighter demeanour and spoke of many new ideas stemming from this broader understanding of his business.

Transfer of knowledge

It was suggested to the owner to reflect on information generated during the workshop and discover what aspects, ideas and direction excites him the most. Furthermore, It was highlighted the benefits of engaging with customers throughout the project. Reflection, engagement, knowledge transfer and the generation of new ideas were facilitated by digital copies of the maps created throughout the workshop (Fig. 52)

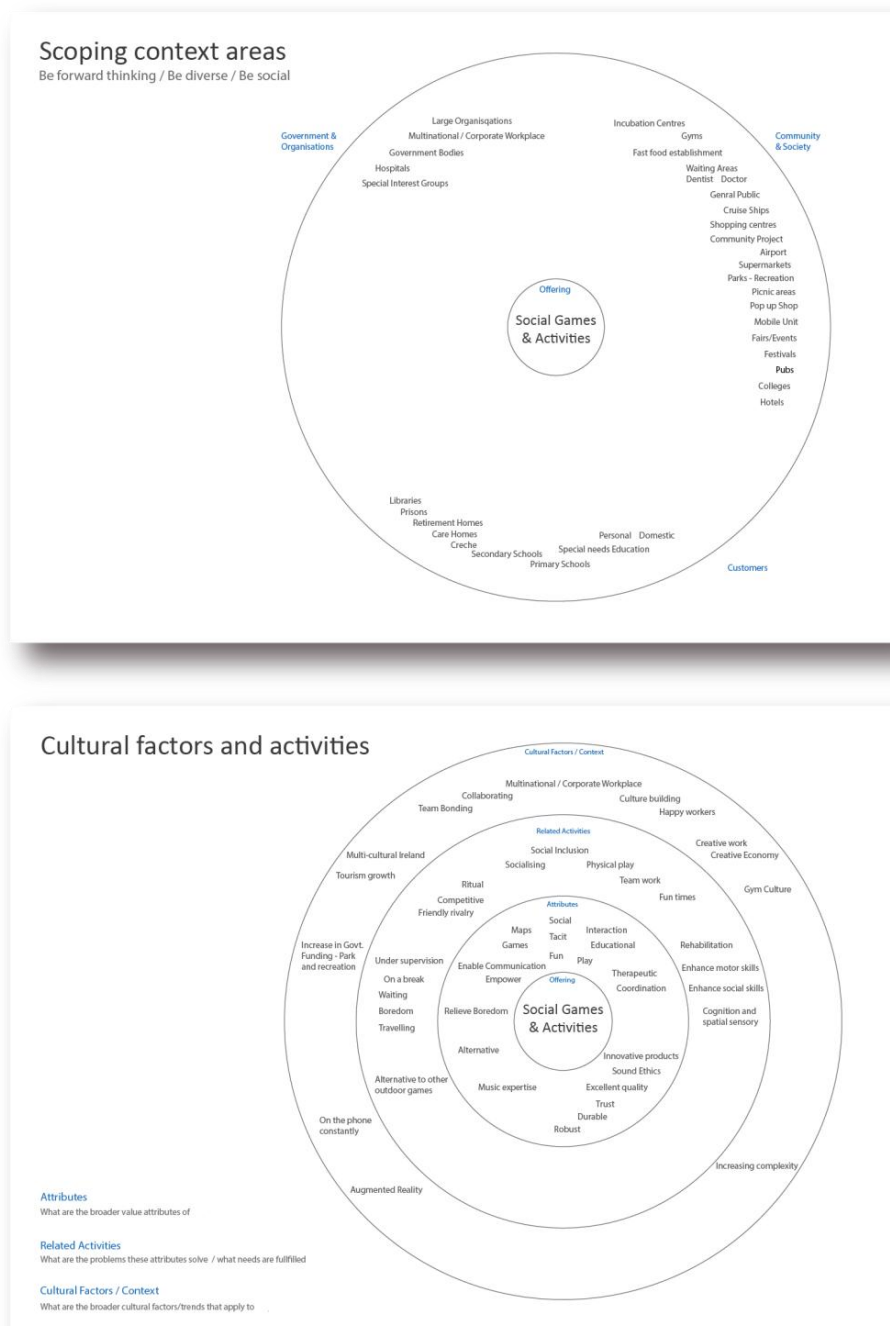


Fig. 52 Documents from Workshop One of the Ecology Mapping

5.2.3 Ecology Mapping – Workshop Two

Objectives

- To review the owners thinking over the past week
- To refine the core values of the business
- To direct the owner in the context areas he would like to focus on

Planning

- Data from Workshop One is refined
- Context areas are categorised from rigid (institutional) settings to open (public) settings, within this categorisation, needs to be met shift from being a needed educational/therapeutic tool to a desired fun/social activity.

Process

The workshop began by reviewing the previous workshop, discussing the owners thinking and emotions since, and explaining the plan for the workshop ahead. The workshop then consults and discusses the main visual. This discussion enables a better understanding of the core values and broader context areas that are applicable. An initial mission statement is then generated. The workshop concludes with a group reflection.

Conclusions from workshop

Focusing on more open contexts has brought a fresh and invigorated perspective of the business for the owner. The workshop establishes that the owner wants to develop something that enhances and engages the community and provides broader social and community value. This is reflected in the mission statement:

Enabling social inclusion, fun and expression in Irish regional communities

The following week the owner is tasked with engaging with five different individuals in his local community. While the owner has already enquired about future product possibilities. It

has been important to distance from ideas of product development until a desired and relevant future is articulated and understood.

Transfer of knowledge

The main document from the workshop is shared to help in processing and reflecting on information (Fig. 53)

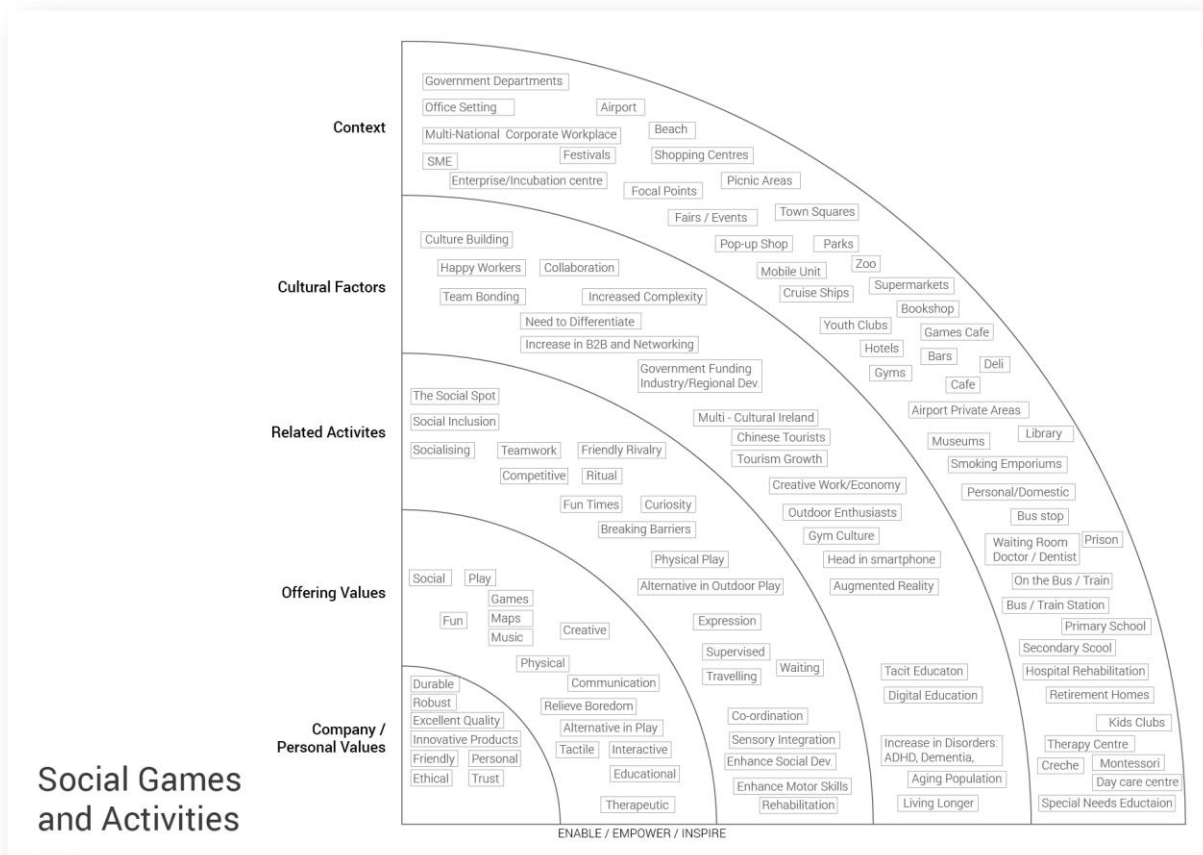


Fig. 53 Document from workshop 2 of the Ecology Mapping

5.2.4 Ecology Mapping - Workshop Three

Objectives

- To reflect on the owners thinking over the past week
- To facilitate in discovering the contexts he would like to operate in
- To segment the different community settings to highlight the different buyers and users and their different needs and motivations
- To articulate a SWOT analysis with the owner, enabling him to see how his capabilities align with his emerging desired future

Planning

- Map the different stakeholders of a local community. Additionally, include communities in larger settings and online communities
- Segment different communities and expand on promising directions
- Create an example of a User journey map (although there is no solution yet) this will enable the owner to see the other aspects of his platform that may need attention and improvement

Process

This workshop focused on developing an understanding of different community segments and the value that these segments can have in regards to, revenue potential, suitability and alignment with the business offerings. Three segments were expanded in this manner including; a local business, a public space and multinational company. A broad user journey was then illustrated to articulate the need for holistic service and avenues to achieve it. The final stage of the workshop centred on co-creating a SWOT analysis and reflecting on this. In this reflection examples of the business website and logo were shared to discuss alignment with the emerging perspective of the business. A visual depicting the wide range of products the enterprise offers via their website was also discussed.

Conclusions from workshop

This workshop illustrates that the owner has difficulty in envisaging and articulating his vision without a defined product in mind. It is highlighted that once this project is complete, a clear and relevant basis will be created that will enable the development of a solution/suite of solutions. This workshop highlighted increased opportunities in larger community settings, such as public places and large organisations, which have a diversity in people, align with the values of the company and have increased spending power. During the owner's research in the previous week, it was highlighted that in talking to the local primary school principal, he had no problem in engaging and discussing his business with a fresh perspective of the company and framing of offerings. It was brought to light the possibility of developing a digital solution and it was advised that this direction did not align with the values of the owner or business. Additionally, developing a digital solution, only increases tension on already limited resources and Design, manufacturing and supply chain.

The owner was asked to engage with people in open public areas in the week leading to the next workshop. The combination of the community segmentation and analysis, SWOT Analysis and broad user journey, enabled the owner to see the difficulties in focusing on local communities. Additionally it emphasised the importance of social media, branding and other forms of communication. As a result the owner is beginning to view the enterprise as a platform and service as opposed to the sole creator of products. It is evident that the owner is apprehensive about scaling his operation into these new contexts, as he felt he did not have the necessary skills and resources at present to do so.

Knowledge Transfer

Documents from the workshop are given to help in processing and reflecting on information. A final take away package is in development.

Workshop 3

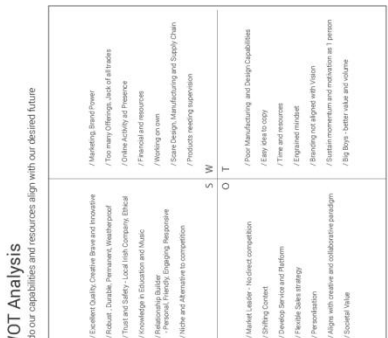
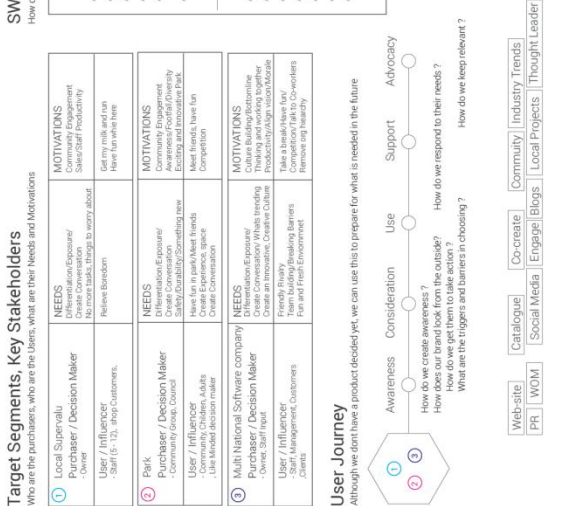
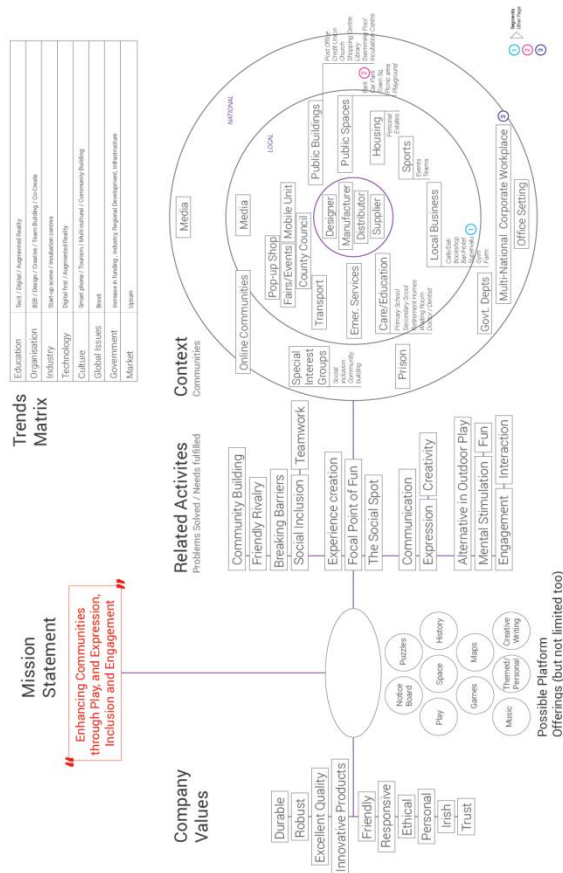


Fig. 54 Snapshot and documents from workshop three of the Ecology Mapping

5.2.5 Ecology mapping – Workshop Four

Objectives

- To refine the story for the owner
- To articulate the values of the enterprise and the personal attachment of the owner
- To enable the owner to see the different contexts that are open to him in the future, the difficulties and opportunities within them and how he can best prepare for his desired strategic future in the coming months

Planning

- Refine and visualise information collected to date
- Increase understanding within each community segment

Process

The workshop commenced by reflecting on the owners thinking since the previous workshop and discussing the plan and objectives for this workshop. It was highlighted that understanding of the business has transitioned from being a business that offers educational games and resources to an enabler of engagement and inclusion in social spaces. These values were then aligned with cultural trends and factors to depict relevance of the business purpose. Different contexts were then explored which highlights increased opportunities in larger contexts, the customer journey was elaborated on to see the different touchpoints and means to include the customer. The last activity was to return to the SWOT analysis to see the imperatives for realising the desired future direction.

Information was reflected on at the end of the workshop.

Conclusions from workshop

Reflective of the previous workshop, the owner has difficulty in formulating his desired direction and understanding his values without a physical product in mind. Focusing on the word space enabled this understanding. It became clear that collaboration and bringing value into public spaces are core factors for his desired future and he is excited about the possibility of co-creating with communities and collaborating with other companies in creating these spaces. The owner has an area in mind that he feels could be an excellent

pilot project for the business and will look to get a focus group from his community together over the coming months to discuss and create ideas for this space.

Enhancing communities through games, activities and spaces that support engagement and inclusion

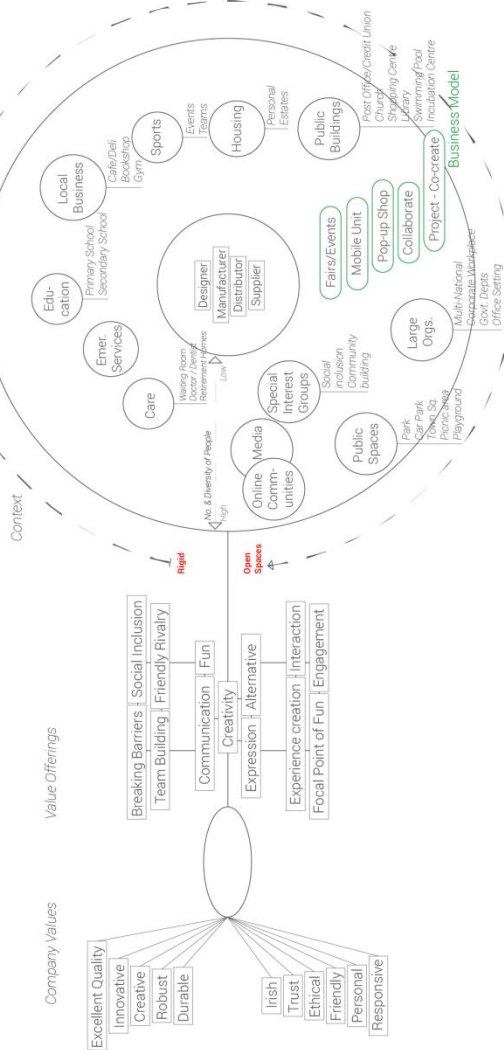
It was discussed that gaining funding and acceptance into public spaces and buildings would require metrics to highlight benefits to potential buyers. While the benefits of the business offerings are predominantly soft values, ideas for recording hard metrics should be considered, such as (footfall, experience - before and after, exposure and activity - online and offline, surrounding business trade, etc.), a contact was also given to the owner who has experience in creating community spaces and gaining acceptance and funding to do so. While the owner was apprehensive about the need for increasing his online activity. He has been pro-active in building his skills. At the time of the research the owner was undertaking a programme in the local enterprise centre that will build these skills.

Future Actions

Documents from the workshop were given to the owner to help in processing and reflecting on information (Fig. 55). The final package from the Ecology Mapping was delivered the following week.

Workshop 4

Mission Statement
“ Enhancing Communities through games, activities & spaces that support, Inclusion & Engagement ”



Trends
 Increase in funding, Industry, Regional Development, Infrastructure
 Tacit & Digital Education / Smart phone / Tourism / Multi-cultural / Community Building
 B2B / Design to fore / Creative / Team Building / Co-Create / Start-up scene / Incubation centres

SWOT Analysis
 How do our capabilities and resources align with our desired future

Build	<ul style="list-style-type: none"> Create and Innovate Excellent Quality, Robust, Durable Trust and Safety - Local Irish Company, Ethical Personal, Friendly, Engaging, Responsible Niche - Alternative to competition 	Address	<ul style="list-style-type: none"> Brand Power and Alignment Online Activity and Presence Homebased Offerings Working on own - Finance, resources, time Scale, Design, Manufacturing and Supply Chain
Strengths	<ul style="list-style-type: none"> Market Leader - No direct competition Developed Service and Platform Rebuilt in Safety and correct strategy Reputation and Co-creation Aligns with creative and collaborative paradigm 	Weaknesses	<ul style="list-style-type: none"> Easy idea to copy Engaged mindsets Sustain momentum and motivation as 1 person Big boys - Better value and volume
Opportunities		Threats	
Exploit		Avoid	

Target Segments, Key Stakeholders
 Who are the purchasers, who are the Users, what are their Needs and Motivations

Local Gym	Context Areas	NEEDS	MOTIVATIONS
In: Main gym/Common Areas	Context Areas		
Out: Purchaser / Decision Maker		Differentiation/Exposure/ No more talks things to worry about	Engage Staff and Customers Sales/Staff Productivity
User / Influencer		Do my workout and go Catch up with gym friends	Relieve Boredom/Have Fun Competition
Park	Context Areas: All outside		
In: Purchaser / Decision Maker		Differentiation/Exposure/ Create Community/Client Create Experience Safety/Durability/Diversity Something new/increased Footfall	Bring in Diversity/Togethery/ Create Community/Client Create Experience Awareness as an Exciting and Innovative Park Regional Rejuvenation/Community Ownership
Out: User / Influencer		Safe and fun environment Exciting Park/Social Space	Meet friends/Have fun Competition
Multi-National Software	Context Areas: Business Grounds		
In: Meeting/Conference/Reception Common areas		Differentiation/Exposure/ Create Conversation/ What's trending Create an Innovative & Creative Culture including our customers & clients	Culture Building/Brainstorming Thinking and working together Productivity/Align vision/Morale Remove Old Hierarchy
Out: Purchaser / Decision Maker		Fun and Fresh environment/Team work Have fun/Friendly/Invity/ Open Environment	Take a break/Have fun/ Have fun/Have fun/ Team building/Brainstorming Share Understanding
User / Influencer		Staff Management/Customers/Clients	

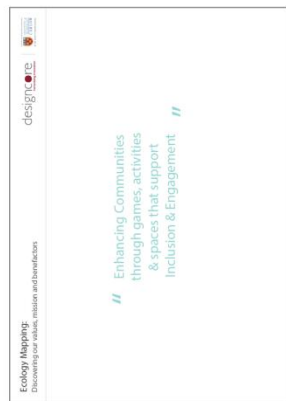
Hard - Soft Values, what can we influence/benefit, that we can measure?

Fig. 55 Snapshot and documents from workshop 4 of the Ecology Mapping

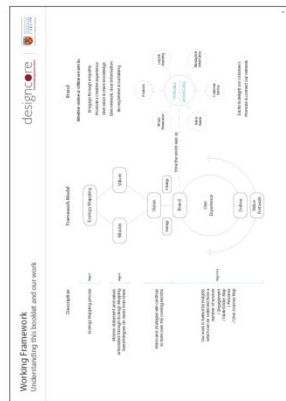
5.2.6 Final Package

The final package generated from the ecology mapping is a six page main document that includes all information created throughout the process in order to build the understanding of the identity and purpose of the business for the owner. An overview of these documents can be found on page 128 (Fig. 56). Other documents sent to the owner included information regarding facilitating a focus group with members from his local community, blank templates with questions and best practice for developing a mind mapping session, stakeholder map and customer journey map. It is also suggested to distance from the project if possible over the Christmas period and start the ideation stage in the New Year.

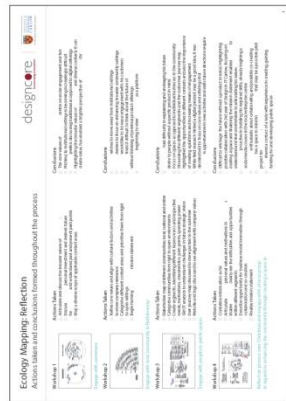
Ecology Mapping documents



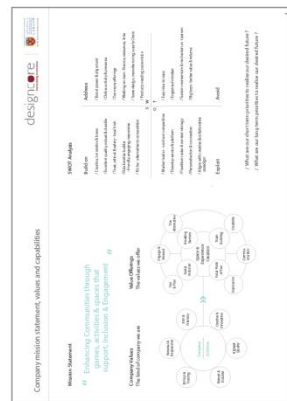
/ Enterprise mission statement, providing a foundation for future activities & messages



/ Framework & description of booklet
/ Highlighting what makes up the business brand and best practice in sustaining the brand, messages & communications

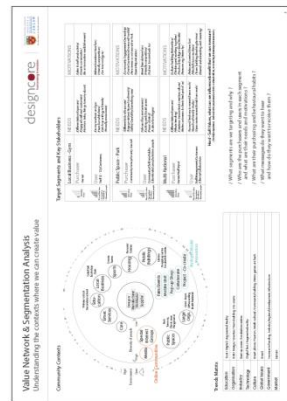


/ Reflection of Ecology mapping, highlighting actions taken & conclusions from each workshop



/ Business values & value offerings, enabling understanding & articulation of the business and providing a basis for future activities and messages

/ SWOT analysis (co-created) & questions that provide a basis that directs the development of future priorities, strategies & objectives



/ Value network & segmentation analysis, enabling understanding of the most relevant contexts & the different stakeholders within them

/ Questions that facilitate future engagement & direction

/ Trends to instill the relevance of the business & its activities



/ Persona & customer journey mapping to enable understanding of the different needs of the buyers & users, the multiple touchpoints through their journey & how the business might engage with them along the way

Fig. 56 Overview of final documents from the Ecology Mapping

5.2.7 Business Owner Reflection

While reflecting on workshop three the owner stated that *"For a single business owner like myself, to get together with people like you and be able to talk like this is a real eye opener and massive help"* In reflection after the Ecology Mapping the owner explained that he has been "re-invigorated through this process as to what the future could potentially hold for the business". He now anticipates that the future will be focused on creating social spaces and is excited by the possibility of collaborating and co-creating to build these spaces "I wasn't expecting to be feeling the way I do at this point ie. Extremely positive about the future". Furthermore, he describes the enterprise in regards to a platform with the main aim of enhancing the social space, in contrast to the limited creator of products. Despite a changed perspective, reinvigorated attitude and broader understanding of the enterprise. "What I am unsure of is how best to proceed and capitalise on this thought process". Additionally, he admits that he has "gotten lost a few times or perhaps "overwhelmed" by the speed of the process and the terminology used. It's only because I wouldn't be used to such environments and thought processes. I also found the report a bit deep for me at times"

The owner of business F returned to designCORE after months upon the 'Ecology Mapping' being completed. In this case, the business owner and members from designCORE developed on findings from the 'Ecology Mapping' in a project that focuses on co-creating a community space. This project is in the process of seeking funding and collaboration at present. This highlights that the owner aims to continue to engage with a Design-led approach.

5.3 Vision and Strategy Framework

Understanding of the purpose and identity of the business was developed through the 'Ecology Mapping'. This resulted in the development of the business mission statement built on the values of the owner, which provide a basis for all future activities of the business. This knowledge combined with the co-created SWOT analysis aims to initiate the identification of chosen strategies and the further development of goals and tactics to attain them. The strategy framework is based on the sub-categories illustrated in the final framework from field research.

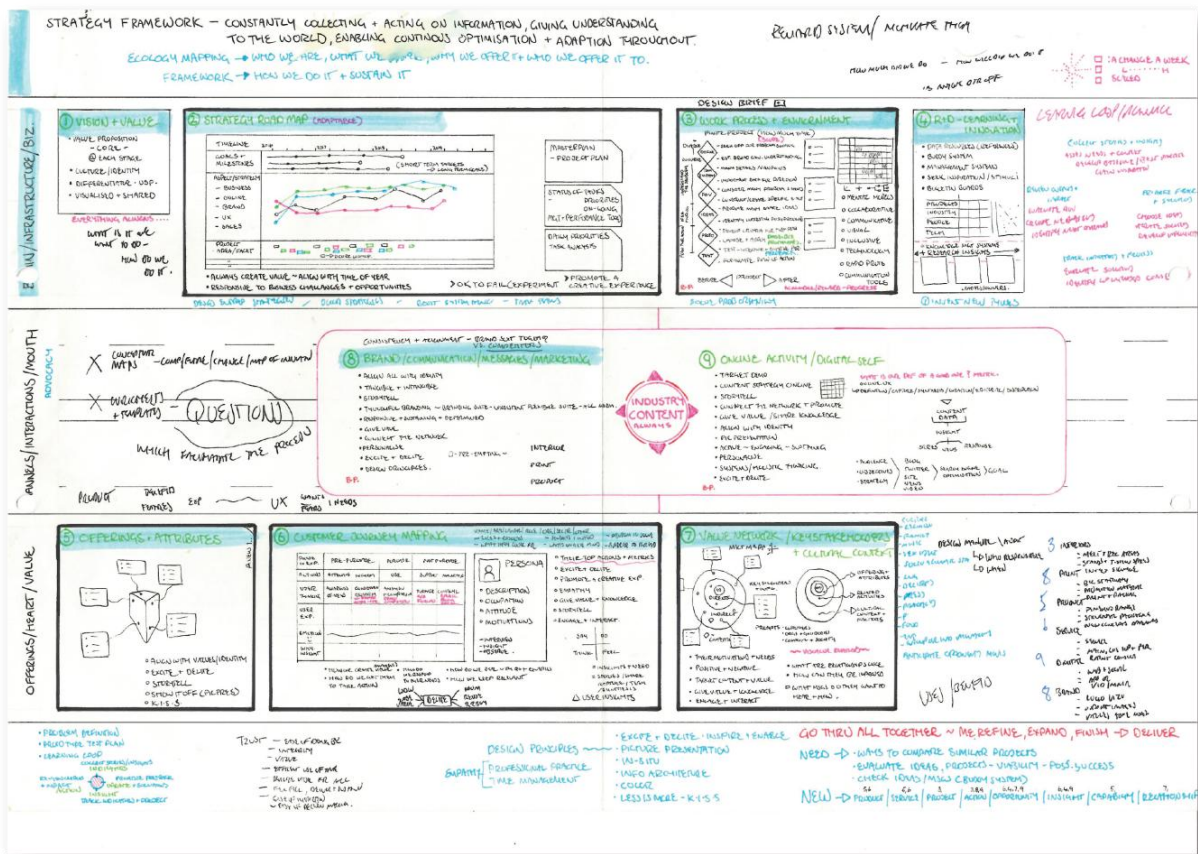
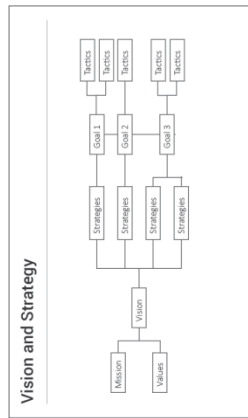


Fig. 57 Developing the documents for the strategy framework

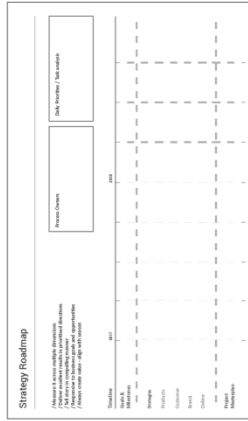
The strategy framework is a resource that aims to facilitate and enable a micro-enterprise to practice a Design-led approach as an integral part of their working process. The strategy framework consists of six main documents that combine with documents from the ecology

mapping to provide the full information package. These documents are a combination of information sheets, worksheets and templates which include questions that facilitate the working process and concept maps and mental models that enable understanding and insight. An overview of the documents in the strategy framework can be found on page 132 (Fig. 58). The combination of documents from the ecology mapping and strategy framework and their relationships with the final framework from field research can be found on page 133 (Fig. 59). The strategy framework is not developed to a testing stage in this research. The building innovation framework (page 29) illustrates that DT is the method to envisage strategies, hence there are strong possibilities that DT can enable the identification of strategies in further research in this context.

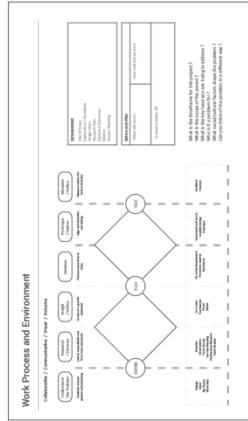
Strategy Framework documents



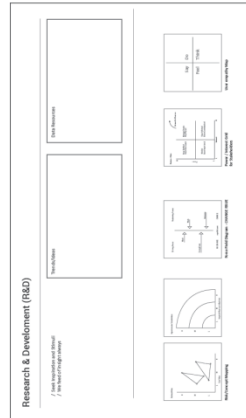
- / Mission statement, business values & SWOT analysis provide the foundation for desired vision & strategic planning
- / Vision is a 3-5 year flexible driving goal, strategies are then developed in the working process, user-experience, brand, value network & online activity areas of the business. Followed by goals & tactics to achieve them



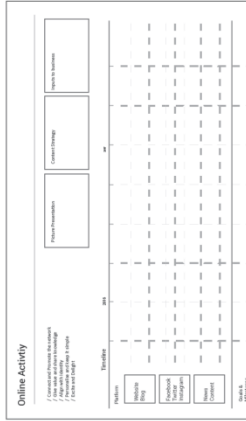
- / Strategy roadmap, demonstrates the strategies in progress & enables a continuous understanding of the business & its activities
- / Best practice is described
- / Daily activities, task analysis & process owners are illustrated



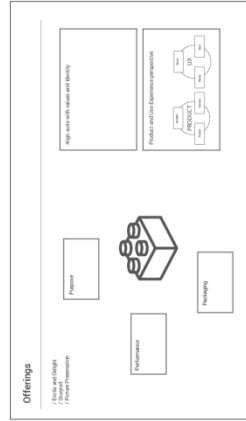
- / Work process & environment, facilitation tools & best practice for working & creating a conducive environment for innovation
- / Directions to facilitate the enterprise through the Design process, including a Design brief & learning card
- / Questions that facilitate each project & general day-to-day operations



- / R & D, developing insight from research generated throughout the enterprise
- / Data resources, trends & ideas captured
- / Best practice, mental models & concept maps to understand & find new meaning



- / Online activity strategic roadmap & project management
- / Best practice in engagement



- / Offerings, highlighting the characteristics & purpose of existing offerings & providing a basis for the development of future offerings
- / Highlighting alignment with values & identity
- / Product & user perspective of new offering

Fig. 58 Overview of documents in the strategy framework

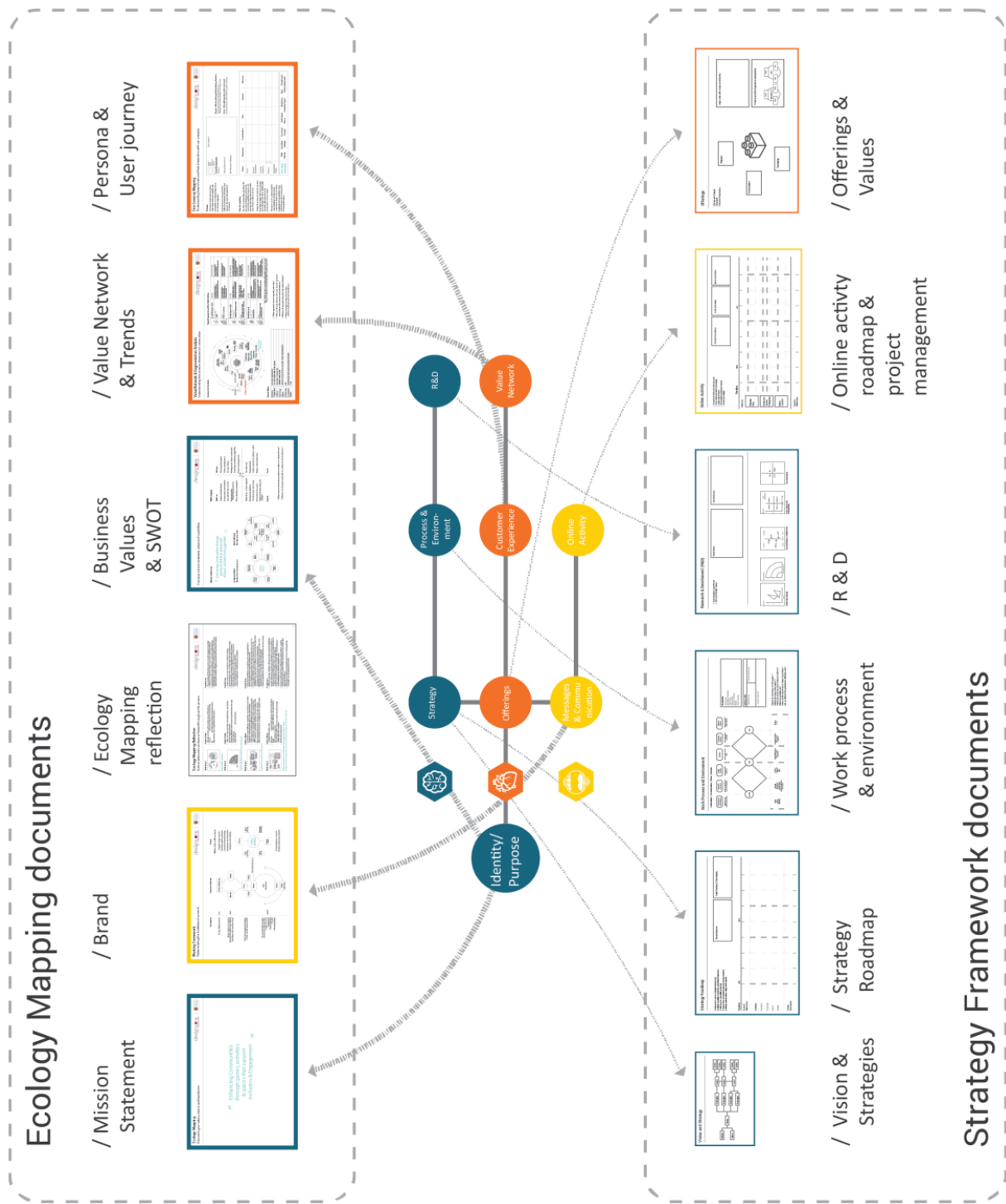


Fig. 59 The relationship between findings, Design interventions and documents

5.4 Building a Design Capability in the Micro-enterprise

The Design interventions illustrated previously highlight that DT can build understanding of a micro-enterprises identity and purpose and initiate the desire to adopt a Design-led approach. Additionally, Design can add value and be managed across the enterprise in alignment with the enterprise framework. However, significant obstacles are faced in successfully transferring and sustaining a Design-led approach in the micro-enterprise.

The building innovation capability framework (page.29) demonstrates the task in sustaining a Design capability in enterprises. Findings from this research suggest novel findings in the relationship between the innovation building framework and the interpreted Design capability building framework focused on the micro-enterprises, developed through this research.

The novel finding in the building Design capability framework generated through this research asserts the need to define the identity and purpose of micro-enterprises before articulating strategy and vision. The informality of micro-enterprises suggests the increased need to understand who they are in the present, in order to offer their most relevant value in the future. Additionally, the process of developing understanding through DT can enable and cultural change in both the development of the purpose and identity and strategy and vision. The building Design capability framework is found on page 135 (Fig. 60). The other phases are comparable with the building innovation framework. This shows the extent and changes needed to sustain a Design-led approach in these businesses



Building Innovation Framework (Lawlor et al. 2015)



Building Design capability in the micro-enterprise (Self-Generated)

Fig. 60 Building Design Capability in the micro-enterprise – Adapted from Lawlor et al. (2015)

5.5 Design Thinking and the Broader Structural Environment

Research highlights that DT can offer significant value to the broader structural context in a number of different areas.

- DT and 'Ecology Mapping' can link with existing industry support bodies such as IDA, LEOs and Enterprise Ireland. In these cases 'Ecology Mapping' can mitigate risk and optimise understanding for businesses of any size, providing a relevant basis for future activities.
- DT can be integrated with programmes such as the S.Y.O.B (Start Your Own Business) programme. Here the explorative, human centred, and holistic orientation of DT can be the catalyst at the start of their 10 step programme
- DT can offer the same value to business consultancies. DT does not replace existing management practices, it enhances and optimises them
- DT can bring the divergent, integrative and human-centred thinking that is often missing in existing contexts such as incubation centres and enterprise centres
- In the spirit of DT, this research highlights the significant broader value creation that can be achieved in regard to business to business collaboration, co-creation, community and regional development and DT's ability to optimise and celebrate these events.

5.6 Micro-enterprise Design Centres

It has been described that DT can offer significant value to micro enterprises but there are significant obstacles in transferring and sustaining Design in these enterprises. In line with DT and the desire for broader value creation in collaborating and community building. This research ambitiously suggests the development of regional Design centres throughout Ireland that focus on micro-enterprises, start-ups and entrepreneurs. This centre can align with the two Design interventions developed previously in this chapter and would enable enterprises:

- Easy access to knowledge sharing and information
- Test and get feedback on ideas and concepts
- Access strategic advice and expertise
- Collaborate with other businesses and industry leaders
- Create novel collaborative activities and portals
- Leadership and management development capabilities
- Skill building

While this is an ambitious proposition, it directly aligns with the national strategies promoting indigenous industries, community and regional development, social innovation (APJ 2015-2107), and Design-led innovation (Lawlor et al, 2015). The Design centre would prove difficult to value through traditional metrics initially, however, it offers the possibility of significant broader value creation and sustainability in the future.

“Vibrant and competitive regions are important, not just from an economic perspective, but also from a societal point of view. Growing the economic base of regions supports social cohesion and provides opportunities for families to continue to live and work in their local communities”.

Richard Bruton (APJ-SE. p.3)

In the same manner as the objectives of the Micro-enterprise Design centre. Wylant describes the importance of ‘clusters’ in enhancing the microeconomic capability of a given region. These ‘clusters’ are geographic concentrations that allow for access to capabilities, information, expertise, and ideas. They allow to quickly identify new ideas, perceive customer needs, technologies, delivery or operating possibilities (p.3, 2008). This research suggests building the Design capabilities of micro-enterprises in regions throughout Ireland through the proposed micro-enterprise Design centres can offer collective growth and innovation of businesses in the region.

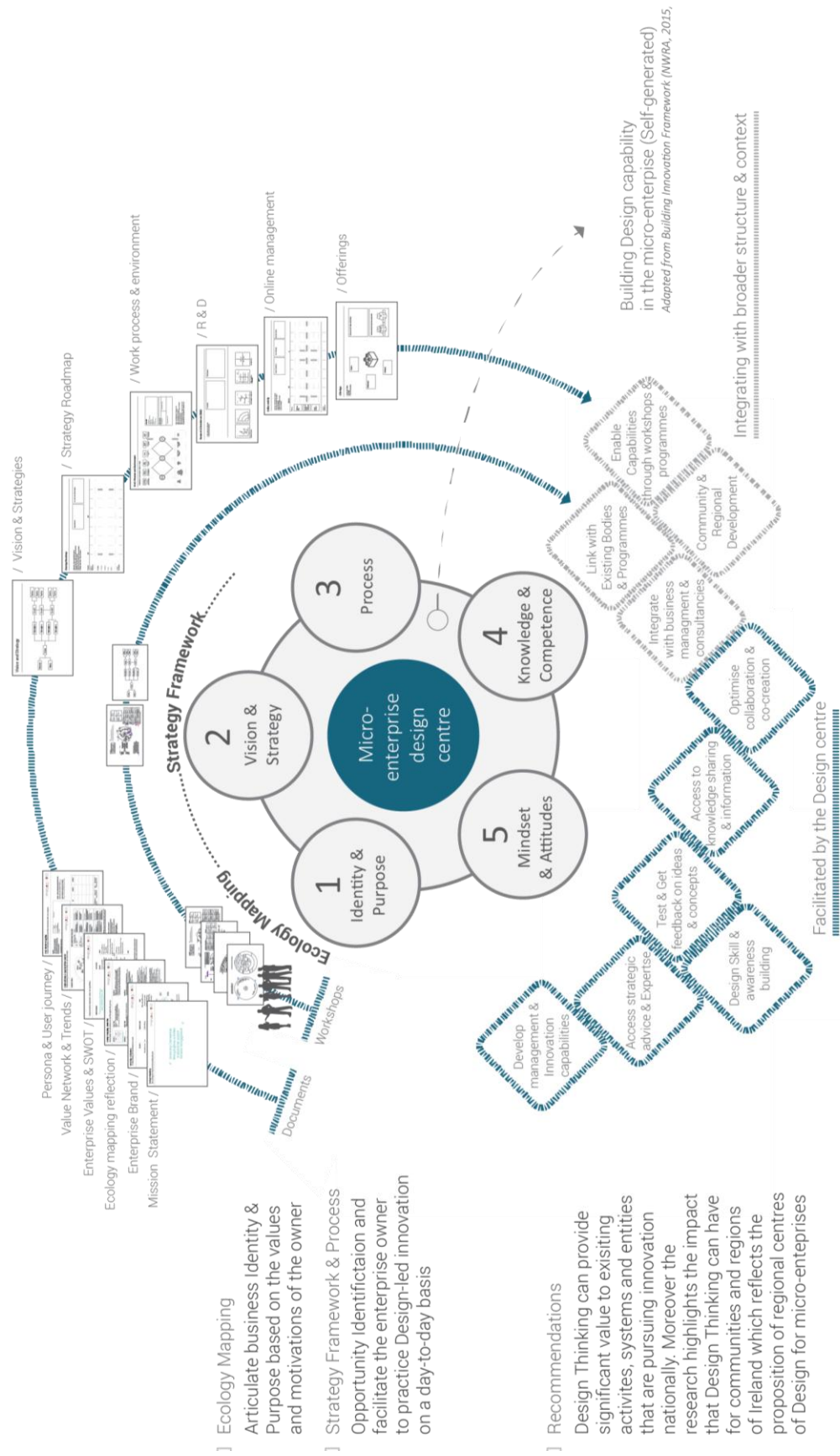


Fig. 61 Graphic highlighting the study's outcomes

5.7 Design Thinking Facilitator

The 'Ecology Mapping' and holistic and integrative nature of DT (Lindberg et al. 2010 b) offer significant value to activities discussed previously. It has also been discussed that DT is an emerging practice that still lacks clarity in expert areas of Design. As described by Van Patter (2015) now there is an emphasis on "Sensemaking" representing significant different skills and methodologies than traditional Design. Consequently the importance of the DT facilitator in the new multi-disciplinary contexts where DT operates cannot be over-stated.

In these contexts the DT facilitator must create an environment that facilitates and empowers performance and thinking behaviours. Be able to transform multiple perspectives and diverse knowledge into shared insights and continuously motivate and delve into the unknown with a team. Therefore being non-judgemental, sensitive, perceptive, and empathetic with people, and curious, comfortable with ambiguity, optimistic, courageous and determined in the pursuit of progression can all be seen as core attributes of DT facilitators (Vossoughi, 2013; Owen, 2009)

Vossoughi also suggests that DT facilitators are internally motivated by challenge, curiosity and tackling wicked problems (2013). Seeking broader value creation is intrinsically linked with DT and DT facilitators.

5.8 Conclusion

This chapter demonstrates the development of two Design interventions that stem from the final enterprise framework developed in field research. Firstly, the method 'Ecology Mapping' is developed and encompasses a series of collaborative workshops where DT is practiced to empower the business owner in articulating the identity and purpose of the business. This results in a mission statement based on the values of the owner, a changed perspective as to the purpose of the business and a rejuvenated and broader understanding

of the business for the owner. Building on these understandings the strategy framework is developed. The strategy framework intends to continuously facilitate the owner to practice Design-led innovation throughout their practice building on knowledge developed in the 'Ecology Mapping'. A re-visit to the building innovation capability framework illustrated in the literature review, enables validity of the 'Ecology Mapping'. An adaptation of this framework focused on micro-enterprises is generated and solidifies the emerging theory. This summarises that DT can provide significant value to micro-enterprises in building understanding of their purpose and identity and as result initiate cultural change and the desire to adopt a Design-led approach. The activity of DT can also provide significant value to existing activities, systems and entities that are pursuing innovation nationally. The impact that DT can have for communities and regions of Ireland is highlighted and reflected in the proposition of regional centres of Design for these enterprises. The DT facilitator is also discussed with the aim to build understanding of the application of DT in contexts presented throughout the chapter.

6.0 Conclusions

The objective of this study is to develop an understanding of DT and explore its application in micro-enterprises. Literature highlights that DT is now a strategic driver of other innovation processes and enabler of cultural and behavioural change. Knowledge gained from literature coupled with the cataloguing of information on Design throughout, enabled the development of a novel interpretation of DT (Fig. 62). This is developed to distinguish DT from product and service development.

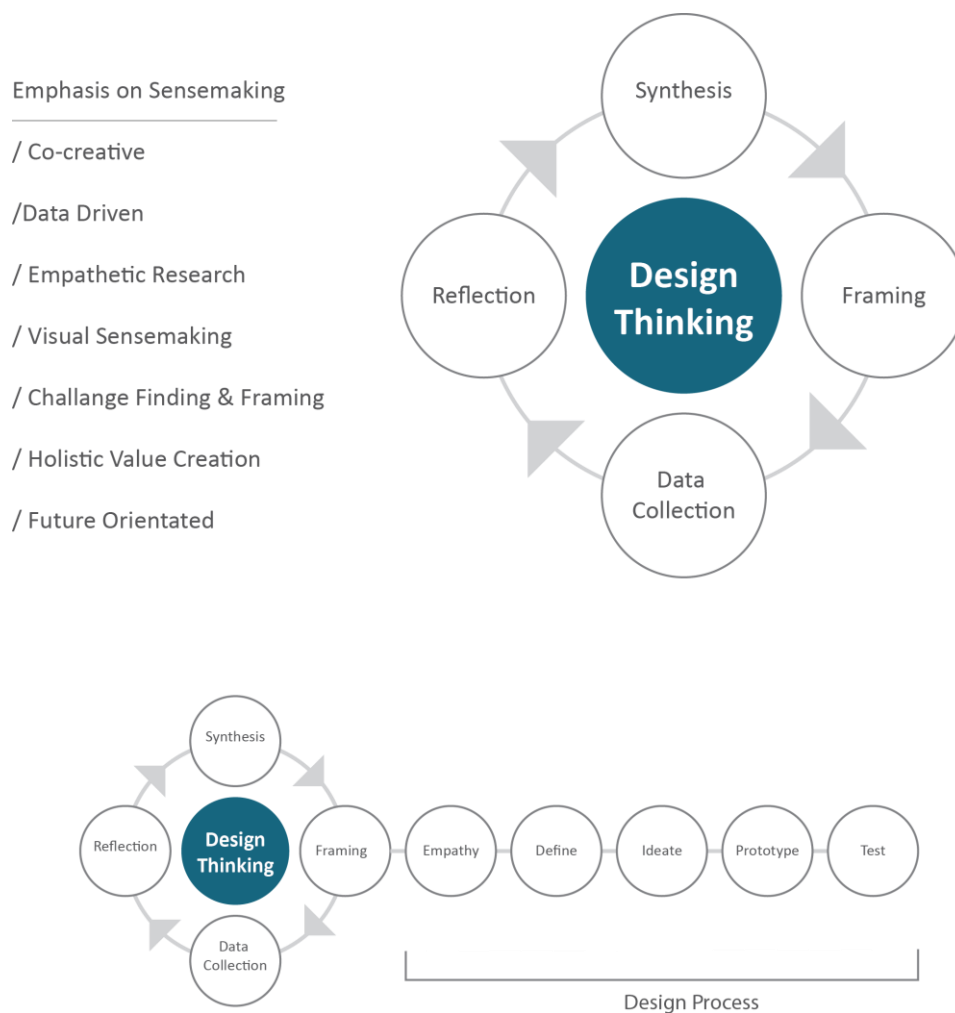


Fig. 62 Interpretation of design thinking generated by the researcher

DT is widespread in Large Organisations (Lawlor et al, 2015) However, findings highlight that there remains a lack of practice and understanding of DT in SMEs. Previous studies looking at Design in smaller businesses focuses on Design competent, successful enterprises and results in descriptions and best practices of Design within each business, making it difficult to see how it is applied. Research highlights that SMEs are predominantly a micro-enterprise and many of these are sole-traders. The scope of this study shifted to micro-enterprise who do not have competence in Design. The objective of field research was to conduct qualitative and transformative research in a diverse range of micro-enterprises. The research approach is mixed method approach and is reflected in the questions that directed the research phase including;

What is the culture of micro-enterprises?

What difficulties do they face?

How can design thinking offer value to these enterprises?

How can a design led approach create value for these enterprises?

Given the lack of existing knowledge on the application of DT in these businesses, the methodological strategy of grounded theory was used to develop new theory that fits the context of study. Grounded theory, combined with Design methodologies enabled the generation of the core category and sub-categories of this study, which were further validated through comparative analysis with Doblin's ten types of Innovation framework. The final framework of business analysis highlights the different areas of the business as the brain, heart and mouth, the core category as the purpose and identity of the micro-enterprise and sub-categories where Design can create value and be managed within.

Findings highlight that the owners of these enterprise have difficulties in strategic thinking and articulating their business values and future motivations. The lack of a clear identity and compelling purpose is reflected throughout the make-up of these micro-enterprises. Moreover, in day to day operations these owners face significant challenges. While highly skilled they predominantly lack other management, innovation and marketing skills.

Stemming from the final enterprise framework, this study is directed to the development of two distinct, but directly related Design interventions. Firstly, the 'Ecology Mapping' is developed to empower the business owner in articulating their identity and purpose. This involves a series of collaborative workshops where DT is practiced with a real enterprise. Secondly, building on findings from the 'Ecology Mapping', a strategy framework is developed to continuously facilitate the owner to practice Design-led innovation throughout their practice. Additionally the broader structural context related to this research is discussed.

The outcome of the 'Ecology Mapping' is a mission statement based on the values of the owner, a changed perspective as to the purpose of the enterprise and a rejuvenated and broader understanding of the enterprise for the owner which are being sustained at present through the business in the owners desire to build community spaces. The 'Ecology Mapping' process did not end with a specific goal that was not the core objective. The process shifted the owner's perspective of the enterprises purpose and identity to something he is invested and excited about and something that offers broader social value. While these factors are difficult to measure immediately and may take time to show rewards, they suggest a more sustainable future and remove the negativity from the owner in regards to struggling with and thinking about the business. Additionally, literature highlights that with another business or entrepreneur there is a high possibility that DT can develop strategies.

This study indicates that DT can be a powerful instigator in re-invigorating the purpose and understanding the identity of a micro - enterprise based on the values of the owner, developed through the proposed 'Ecology Mapping'. This engagement with Design at a strategic level from the onset can enable cultural and behavioural change, and the future desire to adopt a Design-led approach, which directly compliments the many difficulties these enterprise face. Therefore, the potential for DT in the micro-enterprise is great, and engaging with Design at a strategic level from the onset can offer significant novel value to micro-enterprises.

However, many obstacles are faced in sustaining Design among these enterprises. Without Design leadership and enhanced collaboration between the Design infrastructure and micro-enterprises in Ireland, the task is difficult. This study illustrates the scale of change need to sustain Design within these enterprises, by adapting the building innovation framework for Design in micro-enterprises.

DT can offer significant value to collaborative and networking activities. Additionally it can integrate with business consultancies and industry development bodies. In these contexts DT offers something completely different than traditional approaches and can optimise understanding of the present and desired future of enterprises of any scale. In line with the focus of this study; micro-enterprise in regional Ireland, and values of DT. This research emphasises the impact that DT can have for communities and regions of Ireland and proposes an ambitious recommendation that intends to enable the sustained adoption of Design in micro-enterprises

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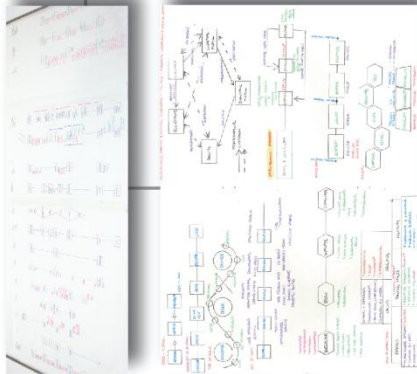
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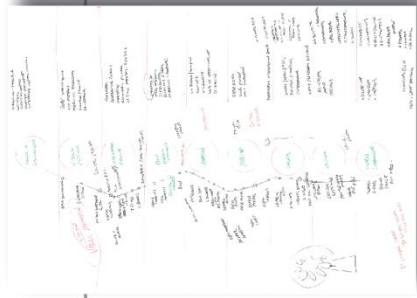
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Appendix A Investigating Design Thinking process models



Review and compare existing DT process models



Develop a process model of the different methods, language and interpretations from models studied

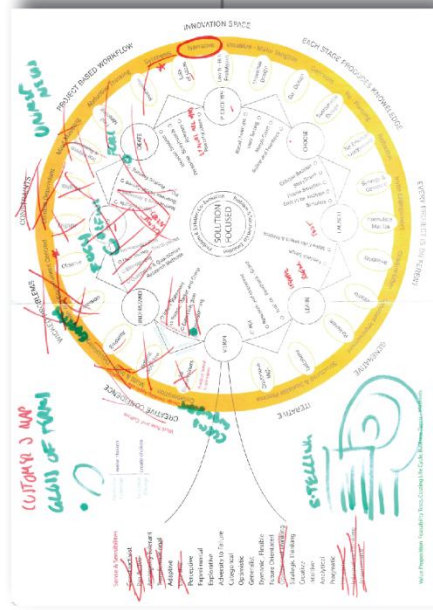


Categorise data with the model: 'A conceptual model of DT' (Carlgen, Rauth and Elmquist, 2013)

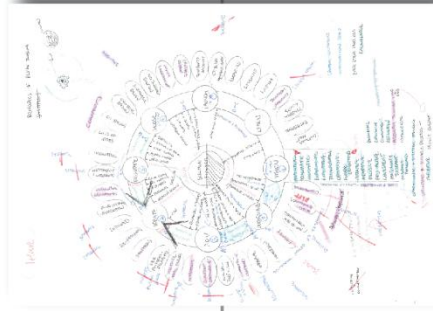


Book 3 - A compilation of Kumar (2012) 101 DESIGN METHODS: A structured approach to driving innovation in your Organisation. A collection of Design methods through a seven phase Design process

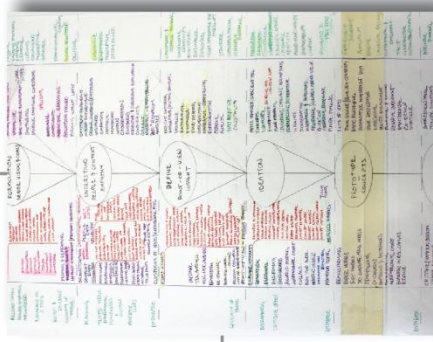
Review and Record Methods (this page is framing insight 4/7)



Attempt digital version. Research highlights that DT is not a process (Lindberg et al. 2010). The process of investigation does improve understanding of Design and DT and enables the development of a model of DT that has the objective to differentiate DT from Design and product and service development.

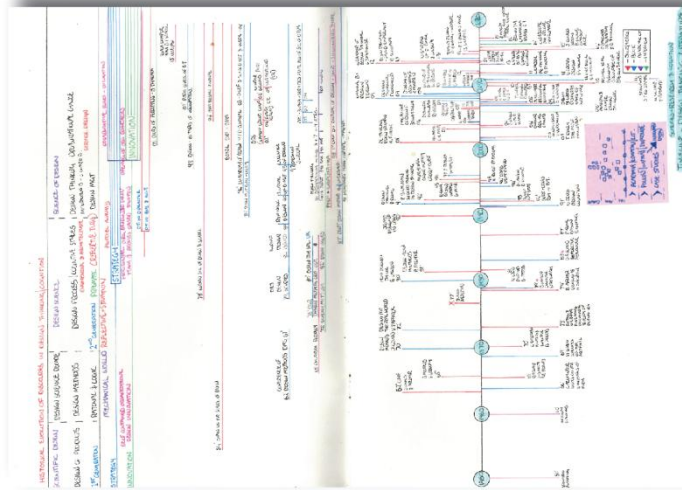


Attempt to develop a novel DT process model

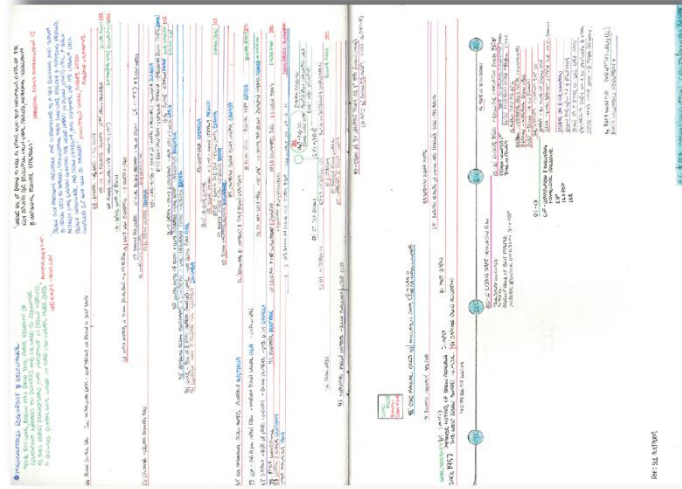


Compile all data into the Design process based on the model by Carlgen, Rauth and Elmquist (2013)

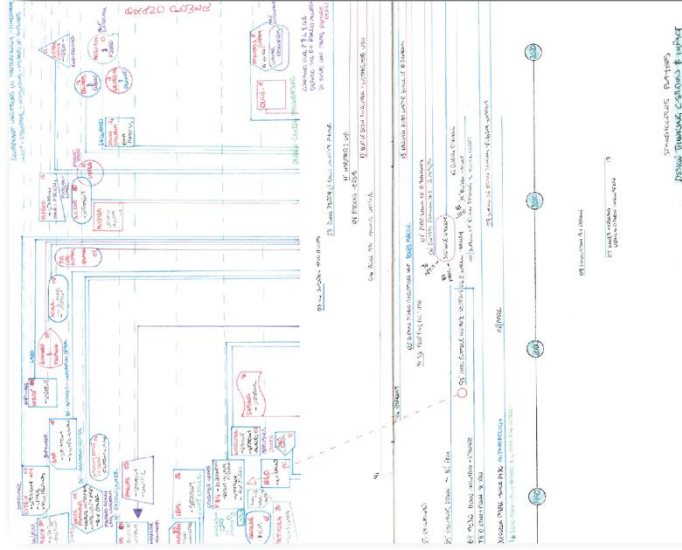
Appendix B: The Development of the Timeline: Industrial Design - from Product Development to Strategic Driver



| Design Thinking Literature,
Evolution of the Design Thinking Discourse



| Design and Innovation in Policy,
Promotional and Awareness Activities



| Design Thinking in Industry, Success
Major Stakeholders, Products and Organisations

| The final Timeline was developed from book two. This book included three separate timelines that were created to build understanding and relevance of Design within each area. Combining these and other information from research to create the final Timeline illustrates the emergence and relevance of Design from a broader perspective.

THE EVOLUTION OF INDUSTRIAL DESIGN

From Product Development to Strategic Driver

Industrial design does not relate to aesthetics or material product development. Industrial design has evolved on a diverse discipline producing more and more tangible products and services, creating meaning and experiences rather than facilitating form and function. Confronted by an increasingly complex and social world and the need for sustainable and transparent solutions in every industry, large organisations have turned to design as the new culture of inquiry and action (Baker, 2004). This increased and diverse use of design has accelerated in organisations of all types attempting to understand and differently design activity and most notably reflect the most complexity of design thinking.

Design thinking is now regarded as a key strategic approach to innovation that delivers holistic value and growth. Its capabilities in problem finding and framing, design thinking with business goals and enables to address every aspect of the innovation process. The value of design thinking is not only in delivering brand new ideas and meanings, but more importantly, the emphasis on solving the right problems. Design thinking offers most value when culturally embedded within an organisation, through transparency, collaboration, inclusion and advanced communication tools, design thinking enables shared visions, understandings and organisational purposes, nurturing a culture of strategic innovation.

Design Thinking in Education

It is well documented that there are an increasing number of complex and social world, riddled by wicked problems. Yet it is difficult to locate these via traditional approaches of education. In response, the design thinking approach has generated significant attention in educational platforms of all areas. Design thinking is now present in the most prestigious business schools, Harvard Business School (2016) emphasises design thinking as a big focus area for business schools in the future. It is also becoming fundamental in engineering schools (Luhst, 2016). In the past five years design thinking has become popular in both primary and secondary education globally, both as programs and as part of the core curriculum. The growing practice of design thinking across all educational levels is a positive sign, as design thinking can be a powerful vehicle for deeper learning and creative problem solving in many contexts. Additionally it develops the often-neglected capacities of design.

Theory, Research & Economic Value of Design

Since 2006 there have been sustained reports showing the impact that design can have on both the macro level of a company and as a driver of growth at micro level (Pfeffer et al., 2012). Notably many reports highlight that not only do design teams outperform competitors but also design teams are more profitable. The design value of the Design Council (2012) report that design thinking within industry and identifying design in official statistics is problematic. There is a lack of reliable comparable statistics and evidence, additionally there has been a neglect of aligning measurement tools with the behavioural, emotional and social aspects of design thinking.

Design Policy, Support Programmes & Promotion

Many reports have suggested that we are on the cusp of a design revolution in business, or perhaps a design paradigm in general. While technology was the catalyst for innovation in the past, the crucial building blocks are other: technology, today for more potent forms of culture, experience and identity determine the choices we make and our interpretations of the complex environments we live in. Co (2015) states that design is now seen as the link between technology, creativity and the user, an essential strategic approach to increase the scope of innovation. The vision of the EC is that by 2020 design should be a well-recognized element of innovation policy across Europe (2011). Yet, according to the EC, the greatest barrier to a better use of design in Europe is the lack of understanding among policy makers (Pfeffer et al., 2012).

In Europe, design was integrated as a policy priority for the first time as one of the seven components of Innovation Union (2010), the overarching policy of Horizon 2020 (the EU Framework Programme for Research and Innovation) and the design policy landscape has transformed since. The first European design action plan in 2012, aimed to focus on increased networking, supports understanding of design, design within SMEs and narrowing the gap between advanced regions and those lagging behind in applying design-driven innovation. Despite the fact that there is a European design action plan in place, there has been little to no impact on a holistic implementation. Current national design policy support focuses on training designers, but other countries, such as strategic factor to the economy while other countries do not even acknowledge design as a public policy. In all cases design remains a design thinking, not a policy. There is a gap between policy vision and policy implementation.



Design Thinking Success

According to US Business Week magazine (2005), design is now an important to corporate management today as it once was in the 1950s. Design thinking has seen design and design thinking become synonymous with the most innovative and successful companies worldwide. Design firms are now leading management consultancies, at present fashion, financial and social media corporations are equating design as a factor. Many multinational corporations are making design thinking a central tenet of their innovation and organisational systems. It has powered five companies like Intel and Adobe and retail and other ones like Google, IBM and HP. IBM reimagining their design strategy and brand image in 2012, helped them build organisational clarity and purpose. However, design thinking success stories and from the largest companies, making it difficult to transfer concepts to understand the value of design thinking or what the practice entails. Additionally design thinking is not always recognized with other innovation processes which specifically justify stating the difference in design thinking and other innovation processes. How design and design thinking approaches to confront wicked problems, involving their own, defined, collaboration and require in their working operations and practice rather than reactive in their pursuit of innovation.

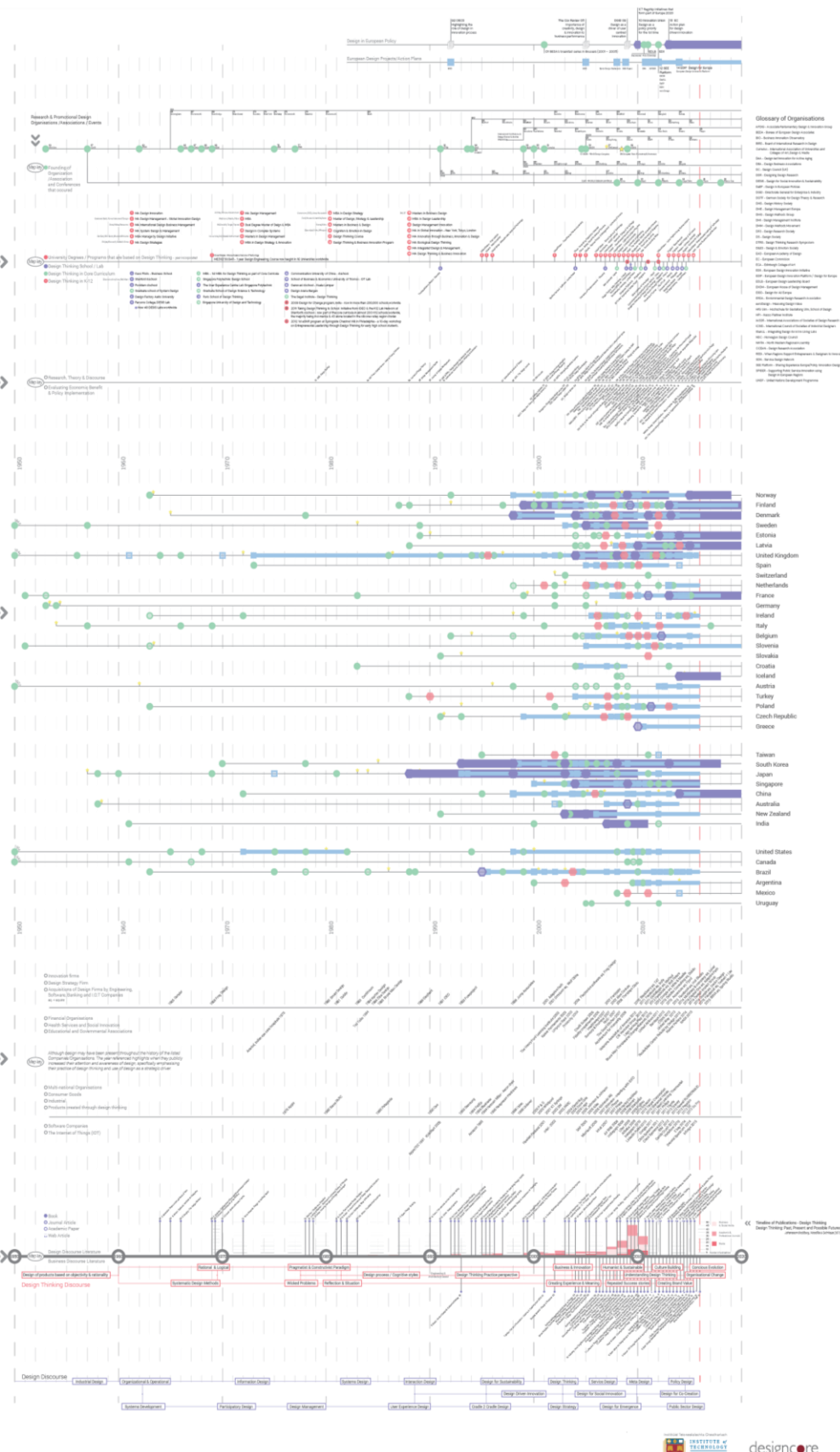
Design Thinking Literature Timeline

The concept of design thinking has received increasing attention during recent years, especially in the business discourse. Significantly, the contrasting use of design thinking in both the design and business discourse has created conflict and regularly surrounding the term. In the business world to be viewed as a generic, while in design practitioners are still building their understanding of the term.

Design and design thinking were not always separate. Originally design thinking can be seen as attempts to articulate design activity. In this context, design has evolved from being a rational problem-solving process. To a for more social, creative and experimental activity based by related problems and demanding significant attention in problem finding and framing. As both problem and solution remain obscure throughout. Design thinking is an iterative activity between both spaces, which constructs desired futures, by finding patterns and building categories, then contextualising this information as a creative strategy, which in turn shapes thinking orientation and behaviour. It is in these ways that design thinking can influence, empower and shape diverse perspectives and stimulation from multiple disciplines, enabling shared understandings, visions and the collaborative generation of new ideas.

The significant problem with mainstream understanding of design thinking is that theory and academic practice often from confused, deliberate decisions or of contradictions in the design thinking. Design thinking is a process for product or service creation. It is a meta tool, that shapes processes. It does not pre-conceived solutions. Design thinking is a creative strategy, which outcome might be and results in diverse outcomes. While there have been attempts in both disciplines to rationalise design thinking from traditional design practices and the activity of making, reflecting best practice found in strategic design processes. These concepts have not gained any traction in mainstream knowledge.

What is unanimous, is that the activity of design has expanded. In this expansion, design thinking has taken on a meaning of its own. How it is bound by wicked problems (complex, ambiguous situations). Emphasising the increased need for deep human-centred research, co-creation, visual thinking, storytelling, challenge finding and framing and architectural of team performance and thinking through. It is an organisational level design thinking is a continuous activity of making sense of the surrounding world, optimising interactions and adapting to both internal and external changing factors.



App. B2 Timeline: The evolution of Industrial Design

Research Project: Design-led micro enterprises

Researcher: Mr. Lee Gaynor

Supervisor: Mr. Hilary Dempsey and Dr PJ. White

Purpose of the research:

The objective of the research is explore the possible application of Design as a strategic driver of innovation in micro-enterprises in regional Ireland. In order to achieve this research intends to develop understanding of how micro-enterprises operate, the difficulties they face and how they can benefit from Design

Benefits of the study:

Possible research outcomes include a better understanding and appreciation of Design. A broader understanding of the business and the development of relationships, patterns and insights in relation to the business and its environment. These factors can result in a fresh perspective and many novel ideas to build on in the future.

What would be expected of you?

Ideally the research would like to observe how a small business owner works through a regular working day. In these observations, work can continue as normal and pictures and other data collection tools will facilitate the collection off data.

Method(s) you will use?

I will use observations, pictures and informal conversation.

Risks?

There are no risks in this research. Interpretations will be given that highlight how and where Design can add value. It is to this business owner if this information is acted on

Confidentiality?

All data collected will only be for thesis study. Participant businesses will remain anonymous throughout.

Participation?

- Do you understand the purpose of the research? (Yes/No)
- Have you read and understood what the research requires of you? (Yes/No)
- Do you understand that you can withdraw from this research at any time? (Yes/No)

Signature: _____

Date: _____

Appendix E: Hypothetical process generated to develop the “Ecology Mapping”

ECOLOGICAL MAPPING PLANNING

The ecology mapping process design thinking to articulate an enterprises purpose and identity. The outcome of the ecology mapping aims to enable the build understanding of who they are, what value they create and who they create this value for



Client Meeting

- Understand clients intent, objectives
- Their problems in their words
- The outcome of the company
- Would they like to play an active role in the process

Interactions with them at the start to define what they want to be as a company. The broad picture of what they are doing

Plan Research

- The research plan
- The scope of the project
- Decide team roles
- Early stakeholders/ cultural activities analysis

Scoping the project, defining the objectives, identifying stakeholders, identifying the scope of the project, identifying the team roles, identifying the early stakeholders/ cultural activities analysis

Collect Data & Share

- Form a 360 outer view of the company
- Investigate online as ability, presence and history
- Unreported market and competition
- 500+ customer feedback if possible
- Production site use if possible
- Trends, benchmarks and best practices

Identifying the data sources, gathering the data, analyzing the data, sharing the data with the team

Visit Business

- Understand their world, operations, personalities, etc.
- Understand the culture of the company
- Essentials, specialness and distinctive
- Company vision and mission
- Company values and core values
- Look through Design lens

Observing the business operations, interacting with the team, understanding the culture, identifying the essentials, specialness and distinctive, identifying the company vision and mission, identifying the company values and core values

Pool findings

- Form a holistic understanding of the company
- Discover together the business areas of opportunity for value creation
- Understand how design thinking aligns with the business
- What connections can we make
- How can networking and collaborations be improved

Synthesizing the findings, identifying the business areas of opportunity, understanding how design thinking aligns with the business, identifying the connections that can be made, identifying how networking and collaborations can be improved

Internal Mapping

- Create a clear, valid and compelling story
- Understand which methods are relevant
- What does the company need to use
- Visualize Company / Ecology Mapping

Creating a clear, valid and compelling story, understanding which methods are relevant, identifying what the company needs to use, visualizing the company/ecology mapping

Workshop

- Deconstruct take them through our story
- Identify our findings and how we bring them
- Motivate them, empower them to make their own decisions
- Take the work on their own terms
- Relate value for all
- Create road to trial to accompany story

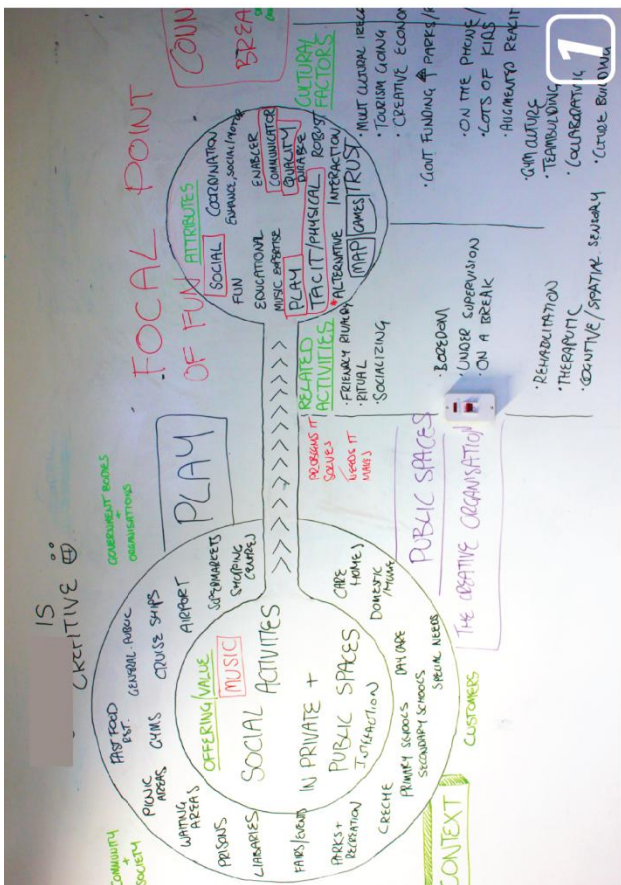
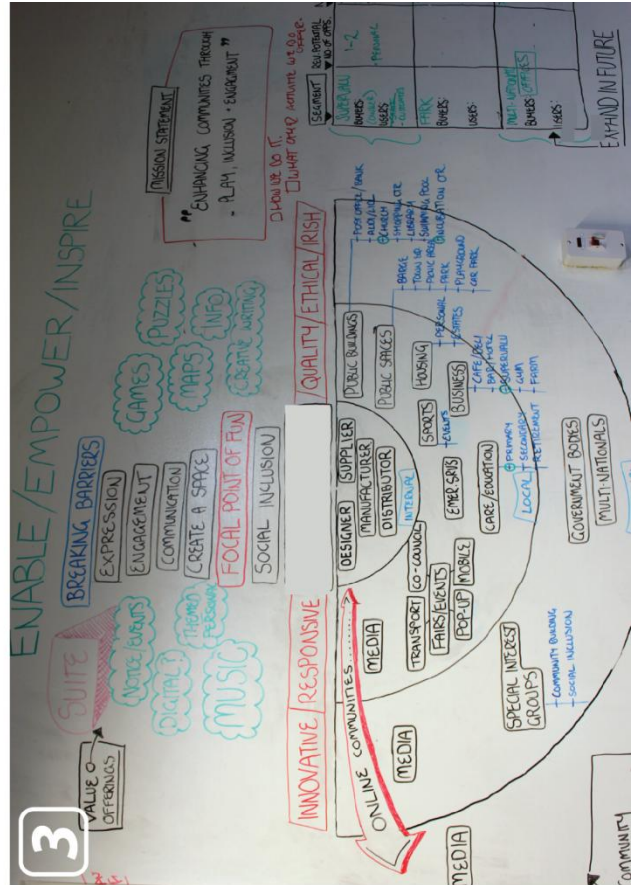
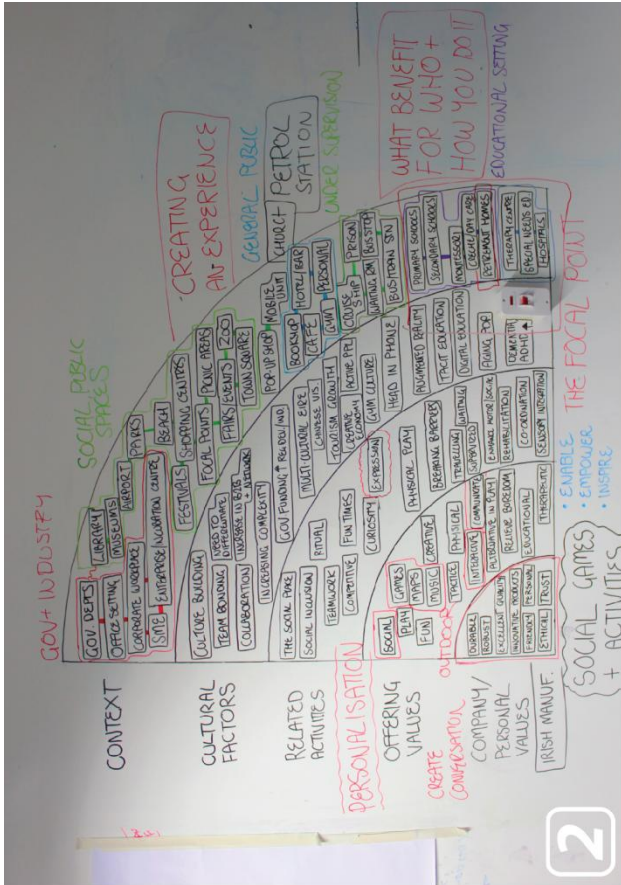
Deconstructing the story, identifying the findings and how to bring them, motivating and empowering the team, taking the work on their own terms, relating value for all, creating a road to trial to accompany the story

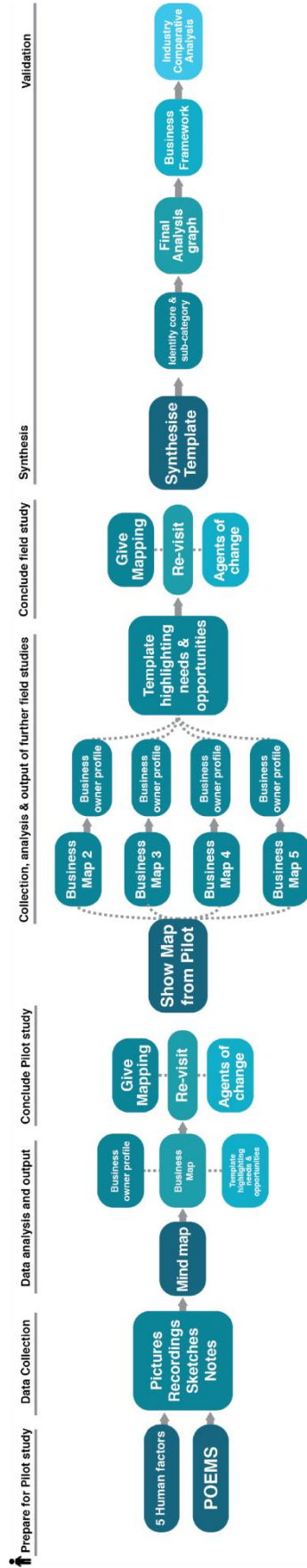
Frame

- Create a challenge map
- Prioritize Challenge Frames
- Brainstorming with some how might we's
- Frame situations and enable them to create a definition of value and their future

Creating a challenge map, prioritizing challenge frames, brainstorming with some how might we's, framing situations and enabling them to create a definition of value and their future

○ Methods will change with project/business- methods needed and to be realised will be specific to each business





App. G Breakdown of field research