STRAKER, WRIGLEY & NUSEM

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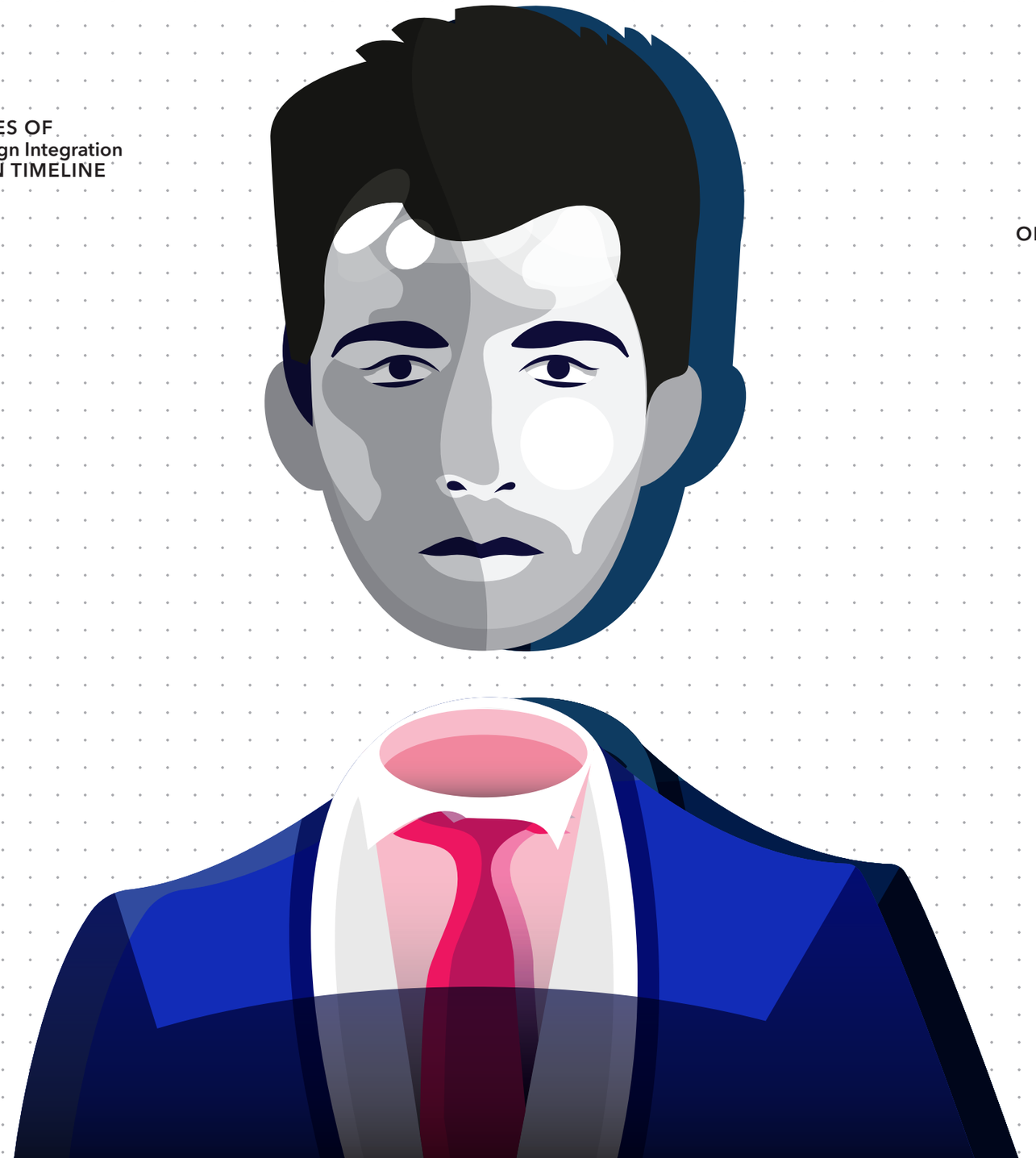
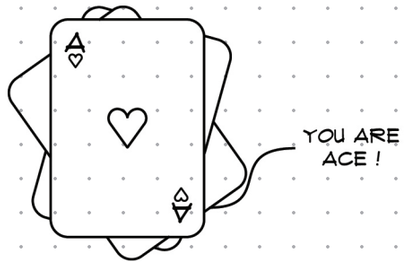


DEDICATION

We dedicate this book to **Dr Judy Matthews** for her constant wisdom and support. Few people are as giving with their time and expert opinion. We have traveled the world together on a quest to push the boundaries of design (back before it was popular) and into the unknown. Without your support, the three of us would not be where we are today!

Thank you Judy



THE AUTHORS

Dr Straker, Professor Wrigley and **Dr Nusem** are proud Queenslanders, colleagues, friends and at one stage even roommates. We have travelled the world together and fought over cereal, task timelines, and what colour the cover of this book should be. We have thrived together as a team and now after a decade of tormenting each other we practically speak our own design language – we would not have it any other way. Being proud Australians means we don't take life too seriously (nor ourselves for that matter); we get to do what we love and love what we do.

Our day jobs consist of running the **Design Innovation Research Group**, (hosting industry research projects from a range of sectors), a university-wide Design Major (teaching design to hundreds of undergrads), and a Master's Program on Design Innovation and Strategic Design at the University of Sydney (where did we find the time to write this book, we hear you ask!) We are educators, innovators, and above all designers! We are not afraid to get things wrong and celebrate our successes along with our failures. We work with numerous multi-disciplinary teams and collaborate on large research projects in the Sydney Nano Institute, Sydney's Westmead Hospital, and the Innovative Cardiovascular Engineering and Technology Laboratory (ICETLAB) at the Prince Charles Hospital in Brisbane.

We have kept busy in the last decade working with businesses from a plethora of industries to explore a design approach to innovation – this includes start-ups and global organisations in both the private and public sectors. To name a few, we have formed partnerships with TAFE NSW, BiVACOR, WaterCo, Suncorp Insurance, Commonwealth Bank of Australia, Enmodes GmbH and the Royal Australian Airforce. We have published in the most prestigious business and design periodicals – Berkeley's California Management Review, Strategy & Leadership and, the MIT Press, Design Issues. This will be our third book together and (probably) not our last. We have inspired international audiences through countless conferences, won global and national awards for our work, and had a fun time doing it!

We have learnt that finding people you not only enjoy working with but who challenge you is rare. Finding people who you trust and become your family after a decade is even rarer – so cheers to us and doing the near impossible every day.

INTRODUCTION

FIFTEEN YEARS AGO, COMPANIES COMPETED ON PRICE. TODAY IT'S QUALITY. TOMORROW IT'S DESIGN.

– Robert Hayes, Harvard University (1991)

Design and innovation are two words that have had a monumental increase in the realm of business in the past decade. A quick scroll through profiles on LinkedIn would reveal a multitude of job titles (either self-created or company-directed) comprised of the keywords design, innovation, and user-centred. This is quite a contrast to when we first started researching design's value in business in 2010: there was very little interest or activity to be seen.

Yet interest in design did begin to grow, with calls for research from a variety of fields (e.g., marketing, business management, strategy and information systems) to advance design theory and methods in business practice. This interest also extends to popular press articles published in Harvard Business Review, Forbes, Bloomberg Businessweek, The Economist, and Fast Company. There is a clear desire to understand this area more deeply – particularly how this knowledge can be translated into practical outcomes for companies.

We have been researching and developing our own method to integrate design within organisations (from the very small to the very, very, very large). Through our experience, we have always believed that design is more than the use of a collection of tools (especially the misconception that using post-it notes means you are designing) or following a step-by-step process (design is not a checklist that you follow to achieve success). Good design is never the result of a particular tool or moving through a number of methods – as these will never be created for your exact context of use. Rittel and Webber (1973) explain that throughout the process of designing, the designer is presented with many choices that guide the form of the final solution. Invariably, these choices are also framed by the constraints presented within a project (Rittel & Webber, 1973). Being a good designer is about understanding why you should use a particular tool, the shortcoming of the methods at your disposal, and knowing when you need to change or modify the process to suit your particular context. Therefore, we believe that you must first explore, debate, and leverage a strong theoretical understanding of design actions and skills before conceiving a process of your own.

The role of design has changed over the years, with terms like design thinking becoming increasingly popular. One distinction made between design and design thinking is that design thinking encompasses the cognitive processes that designers use, rather than the designed objects they create (Dunne, Martin & Rotman, 2006). This illustrates how design is evolving beyond its traditional boundaries in graphic, product, and interaction domain knowledge, into a method for solving complex problems. Today's complex or 'wicked problems' (Buchanan, 1992)[1] are often referenced as the reason for design's rapid up-take in non-design contexts. Designers – through their ability to conduct analysis that combines empathy, creativity, and rationality to provide solutions – are well equipped to manage such problems. This has been further reinforced by: the success of design in many leading organisations such as Apple, Coca-Cola and Deloitte; its link to innovation in executive and management practices; and its support from notable institutions (e.g., IDEO and the Stanford D-School), where design thinking is conceptualised as a way for non-designers to evaluate and use design methods.

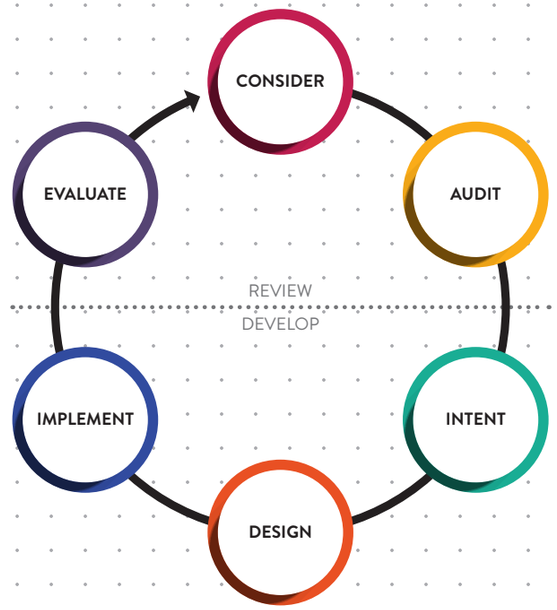
[1] Wicked problems can be defined by lacking immediate solutions, are requiring the management of many stakeholders with conflicting priorities.

DESIGN INNOVATION

Design is the evolution of information (Ullman, 2009). This evolution usually begins with an ill-defined need for a solution and ends with exact specifications for that solution's production and use. The process here is non-linear; it uses abductive and deductive reasoning in what can be described as an intuitive approach. There is no 'one-size-fits-all' process or model.

The highly popular framework of the design thinking process by IDEO (empathise, define, ideate, prototype and test) and its many variations are a great way to articulate the process of designing to non-designers. However, it is naïve to assume that simply following the steps and tools of a design process will always yield innovative outcomes. No model, method, or buzzword will ever be the complete answer – the designer is as important as the design process, so it largely depends on you (the practitioner). For most designers, the relationship between each phase isn't clear-cut, as they are constantly moving between them. Knowing when to move to the next phase and determining which phase should be next is the most crucial part – this is best informed by one's intuition. It depends on you knowing what the best approach is for the context (or trusting that you do) and which methods will achieve the optimal outcome(s). Experienced designers understand the strengths and weaknesses of a design approach, and tailor their approach based on experience and intuition.

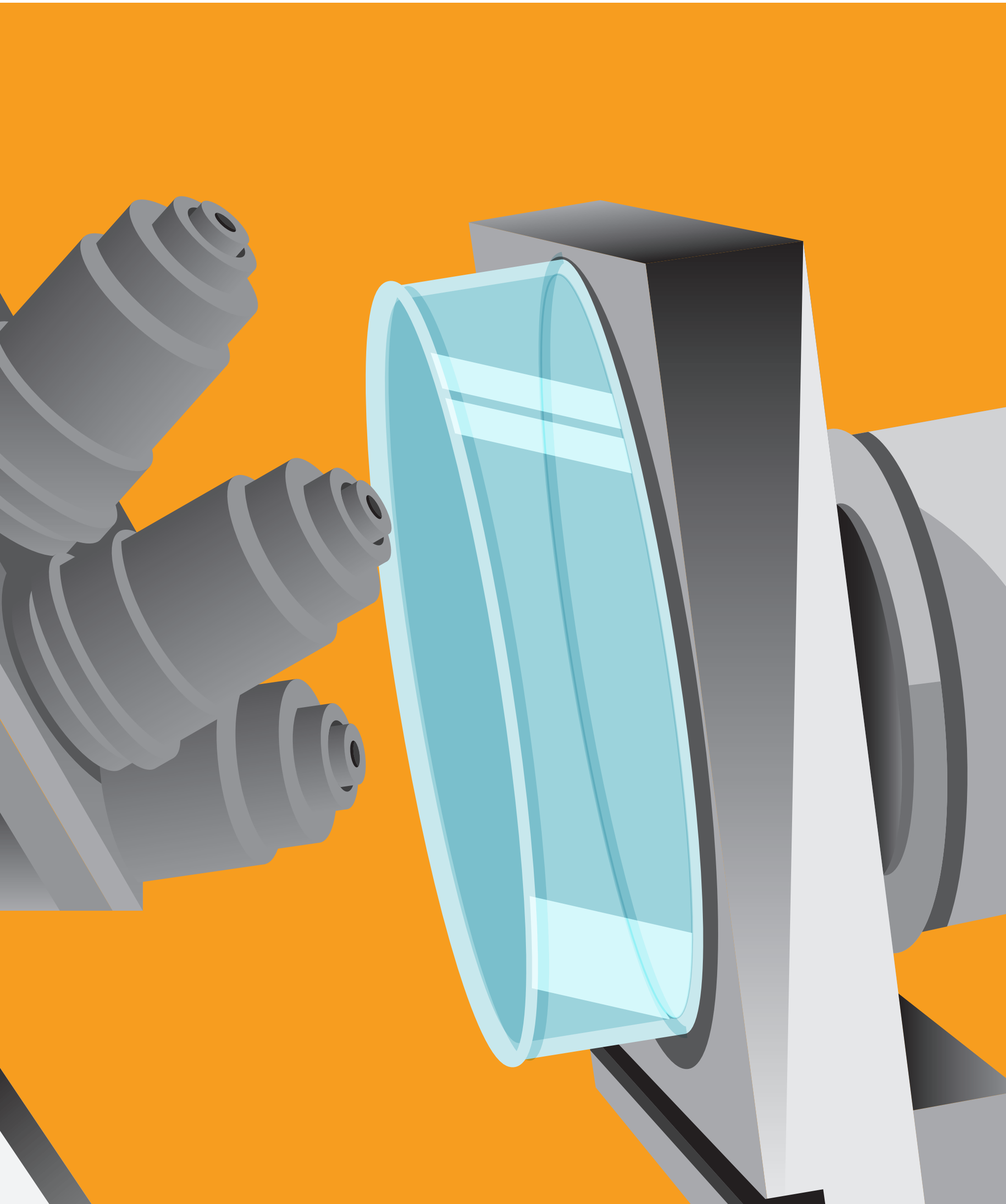
We have witnessed many design teams within organisations assign clear deadlines and metrics to each phase. This robs design teams, particularly novice ones, of their creativity and ability to adapt, experiment and discover. These are all key aspects of design. We fear that such processes will set precedent and the expectation that design is predictable, fixed and linear. It is for these reasons that our framework is not comprised of stages, phases or steps to be used in a rigid manner. The components are included and structured for pedagogical purposes, so that you first understand, apply, and then redesign them to suit you and your project requirements. Each component is built upon design, business, and management theories and practices in the attempt to help you conceive and implement innovative solutions. As explained in our previous work (Nusem, Straker & Wrigley, 2020), the design innovation framework is a cognitive approach of conscious and considered actions and choices, featuring six components:



The components should empower you to approach traditional business practices in an experimental and creative way, question your assumptions, collect insights from staff and customers, and to translate these insights into meaningful strategic and operational decisions. The components are provided to form the foundations of what is required within an organisation to better explore, understand and implement creative solutions in a range of complex contexts. They should not limit you to 'what should be done' but inspire you to question 'what else' could be done.

You will notice that one of the components is titled 'design': this is a conscious effort to showcase that design is a part of a

INSIGHTS



CUSTOMER SEGMENTATION is the first step in defining and selecting a target market to pursue and involves splitting an overall market into two or more groups of customers. Each individual group (or market segment) should denote a typology of customers based on archetypal characteristics or product needs. There are multiple reasons to segment like this:

- TO IDENTIFY AND UNDERSTAND POTENTIAL MARKETS TO ENTER
- TO UNDERSTAND YOUR COMPETITIVE POSITIONING, AS IT CAN SOMETIMES BE EASIER TO COMPETE BY FOCUSING ON A SMALLER, MORE DEFINED GROUP OF CUSTOMERS
- TO PROVIDE NEW OPPORTUNITIES; BY BEING CREATIVE IN THE WAY IN WHICH YOU SEGMENT A MARKET, YOU COULD GENERATE NEW INSIGHTS INTO POTENTIAL AREAS TO EXPLORE.

It can be easy to segment a market based on products, rather than the customer (when it is a product it is usually referred to as a sub-market). Traditionally markets are segmented by:

GEOGRAPHY, when you separate customers based on where they are. This could be done at any scale: continent, country, region, state, city or suburb.

DEMOGRAPHY, which is the most popular due to it being the easiest and more reliable process, including basic information about a person, including:

- AGE
- GENDER
- INCOME
- EDUCATION
- FAMILY
- LIFE STAGE
- OCCUPATION.

PSYCHOGRAPHY, in a mix of other types of segmentation, like age or religion (demographic) or their location (geographic), but explores:

- LIFESTYLE
- INTERESTS
- OPINIONS
- CONCERNS
- PERSONALITY
- VALUES
- ATTITUDES.

BEHAVIOUR, largely related to a person's buying behaviours, including how they make decisions: are they loyal or benefit seeking (e.g. variety, price, or maximum value)?

When thinking about your customer segment, you may want to explore all or a combination of different aspects. Another approach is to start with selecting a market, identifying sub-markets, and then creating market segments using the information above. The template, **SEGMENTING CUSTOMERS** is included for you to explore how to do this. Existing market research data can also be analysed to identify patterns of recurring goals, behaviours and attitudes to form customer segments. Once a customer segment has been identified, a profile for them can be created. Similar to a persona, a market segment profile expands to include information on the market rather than just a person. The process can also be conducted on products (see **PRODUCT ANALYSIS** template).

When you start segmenting customers, give each segment a catchy name. Not only is this fun but it helps explain the difference between groups. It is also useful as you can quickly identify and understand the different segments when they are discussed in reports, presentations and meetings.

SOME EXAMPLES OF MARKET SEGMENT NICKNAMES:

- COST CONSCIOUS
- QUALITY FOCUSED
- HEALTH CONSCIOUS
- BRAND CONSCIOUS
- ENVIRONMENTALLY AWARE
- CONVENIENCE DRIVEN
- RELATIONSHIP FOCUSED
- VARIETY SEEKERS
- CASUAL BUYERS
- 'DO IT YOURSELF'
- COMFORT DRIVEN

A WELL-KNOWN EXAMPLE OF A NICKNAME IS 'BABY BOOMERS', WHICH REFERS TO THE GENERATION OF PEOPLE BORN AFTER 1945 UP UNTIL THE EARLY 1960S.

A **DESIGN BRIEF** is a living document produced for a project team derived from the client or customer frame and viewpoint. A brief outlines the project scope and the necessary deliverables required to satisfy the stated customer goals. It is, according to Owen (1979), the most effective instrument for assisting a team to progress a design project with full confidence and expertise. They are used to not only inform design practice but also to determine and evaluate the deliverables of the project. The design brief can and will change over time, periodically adjusted to address any changes in the scope of the project. The design brief serves as a focal point that anchors the customer, the project team and the design team to a common "drill sheet" (the marching orders everyone plays to).

The design brief usually includes, but is not limited to, a company profile, problem description, constraints, costs, manufacturing possibilities, timeline, budget, goals, outcomes and deliverables. These design briefs also help you frame the outcomes of a design from a customer's perspective. A design brief plays a key role functioning as an effective means to ensure both high standards of design, and to reduce the time that the client spends in negotiations prior to project sign off.

The intrinsic value placed on the customers' perception, Customer Value, has become a key design driver. One prominent tool for measuring this is the Value Proposition Canvas (VPC) by Osterwalder, Pigneur, Bernarda and Smith (2014). . The VPC can assist you to map a product or service to what a customer values and needs, thus assisting in an alignment between product and market. The VPC is an example of an exemplary tool in the designer's quiver that can baseline and inform the **DESIGN BRIEF**.

The purpose of this method is to link insights **(AUDIT)** and the design of feasible solutions. From all the information gathered, you should begin to answer:

- HOW WOULD YOU FRAME THIS INTO A DESIGN INTENT?
- HOW COULD YOU BRIEF SOMEONE ON THE DIRECTION YOU WANT THE DESIGNERS TO GO TO ACHIEVE THE INTENDED OUTCOME?

Using the tool **DESIGN BRIEF**, map out the problems and the aspirations when solving that problem in as much detail as possible (use direct quotes if you have them), from the customer's perspective. The problems and aspirations fall into three broad categories – functional, social and emotional.

What are their aspirations?
This is based on what helps them in their daily life – i.e., what makes things easier, or more enjoyable and efficient? These can be written up as objectives and vary in level of priority:

- **REQUIRED** - These are the gains which a solution cannot function without.
- **EXPECTED** - These are the gains we expect from a solution, even if it could work without them.
- **DESIRED** - These are the gains that we would love to have if we could, but are not expected from a solution.
- **UNEXPECTED** - These are the features that go beyond what is expected.

Now also list the customer's daily struggles and/or their problems. Describe what is annoying and troubling for your customer. These are the blockers that are preventing your customer from getting their job done. These could be undesired costs or situations, negative emotions or unwanted risks.

- WHAT ARE ALL THE DESIGN CONSIDERATIONS AND CONSTRAINTS OF THE PROBLEM?
- WHAT ARE MUST HAVES INVOLVED IN AN APPROPRIATE SOLUTION?
- WHAT ARE THE POTENTIAL CONSTRAINTS OF THE SOLUTION (E.G. MANUFACTURING COSTS, USER BEHAVIOURS)?

Describe the design **INTENT** of the solution. Do not confuse this with an outcome: you don't have to solve this problem, just be able to point to the direction in which to find a solution. List the motivations, rules, criteria of a concept. This can then be used to inform the DESIGN (the next component).

IT IS EASIER TO CRITIQUE OR TO DESIGN?

DESIGN CRITQUE & CRITERIA

Part of the practice of design is a continuous, rapid and repeated sequence of analysis, synthesis and evaluation (McNeill et all. 1998). This is something a designer learns (very quickly) at any good design school, usually in the form of a studio design critique. This is where one person shares their ideas or design concepts with others (usually other designers) to get valuable feedback. Often this feedback is brutally honest and can feel overly harsh the first few times you go through it. Designers quickly learn how to get a thicker skin. You learn how to disassociate from your design and think (and see) it objectively. This builds resilience and makes for a better, more confident designer. You learn how to handle criticism and not get defensive when receiving feedback. This is a critical step for any designer. Without this the design cannot be improved or move forward in its conceptualisation and development. A design critique can help you determine:

- HOW TO CHOOSE BETWEEN DIFFERENT DESIGNS
- HOW TO DECIDE IF ONE IDEA IS BETTER THAN ANOTHER
- HOW TO MEASURE IF ANY IDEA IS BETTER THAN ANOTHER

The general use of 'critique' means a systematic and objective examination of an idea, phenomenon, or artifact, however, within design this also includes an evaluation of an idea as well as the act itself (Hokanson, 2012). These are not easy endeavours, and in reality, will not lead to a clear outcome. They will likely just lead you to just ask more questions. It is the designer's role to know which design will provide the most value to the user or customer. A way to support this process is to create a set of design criteria.

KEY FEATURES WHICH MAKE A DESIGN CRITIQUE:

- ☐ REQUIRES CRITICAL THINKING
- ☐ IDENTIFIES HOW A DESIGN MEETS OR DOESN'T MEET A NEED
- ☐ DELIVERS ACTIONABLE STEPS TO TAKE TO IMPROVE THE DESIGN
- ☐ CREATES AN ENVIRONMENT FOR ACTIVE DISCUSSION (WHERE EVERY OPINION IS VALID)
- ☐ SHOULD LEAVE YOU EMPOWERED + WANTING TO IMPROVE YOUR DESIGN
- ☐ REQUIRES EVERYONE TO ACCEPT THE GOAL IS TO IMPROVE THE DESIGN AND NOT TO PUT SOMEONE DOWN
- ☐ MUST INCLUDE THE REASONING OR LOGIC BEHIND A STATEMENT OR QUESTION (SIMPLY SAYING 'I HATE IT' DOES NOT COUNT AS A CRITIQUE BUT IS SIMPLY SHARING AN OPINION).

DESIGN CRITERIA are explicit goals that the design much achieve to be considered successful. Pitt (2008, 318), when discussing architectural design states, explains that 'before we design the space, we ought to have some criteria to guide our design'. This demonstrates that having criteria will increase the probability that the design will be successful in achieving its goal. Pitt (2008) continues to explain that criteria serves two purposes:

1. GUIDE THE DESIGN
2. TO BE THE FACTORS BY WHICH THE SUCCESS OF DESIGN IS JUDGED.

Criteria can be divided into primary and secondary criterions. Primary criteria can be described as "must haves", while secondary could be described as "nice to haves" – they are highly desirable but not essential for success. Separating criteria into these two groups can assist you to create a hierarchy and help guide design decisions. Use the tool **DESIGN CRITERIA** to start exploring what your design needs. First, give each criteria a catchy name, then provide a short description and classification (is it primary or secondary?).

Some quick tips for writing your criteria include:

- KEEP THEM SHORT BUT AS SPECIFIC AS POSSIBLE
- AVOID VAGUE OR FLUFFY LANGUAGE
- LIST PRIMARY CRITERIA FIRST.

Several tools are available for evaluating designs. We present the **SOLUTION EVALUTATION** tool, which is based off the seminal work of Harris (1964). Specifically, Harris's work on visually representing the strengths and weaknesses of design concepts so they can be evaluated and compared. Over time, this has evolved into a more nuanced version with scoring. Solution evaluation, like many other scorecards, lists pre-defined requirements (criteria) which allow a clear benchmark to be drawn between solutions (design concepts). This method works well with teams as they can work through the scorecard process collectively, allowing for robust conversations that provide clear directions for design.

The purpose of this tool is to visually, quickly and easily benchmark multiple design solutions and evaluate how well they meet your intent and the criteria set. Using the tool **SOLUTION EVALUATION**, list your criteria in the first column and sketch each of your solutions in the boxes in the first row. Then for each solution, go through the criteria and (in the space next to each criterion) provide a short explanation of how it (or how it doesn't) meet the defined criterion. Once each solution has been critiqued add notes on how each solution could be adjusted to fulfil any criteria that were not met. This tool is a visual way to complete a general evaluation of a design, and to further guide design decisions. The use of this tool will allow you evaluate different projects across multiple criteria. The evaluation of a design should not be based on personal intuition alone, but on predetermined criteria that investigate the viability, feasibility and desirability of a concept or solution.

Much like a pitch, a **BUSINESS CASE** is about telling a compelling story about a business need (the problem or opportunity you are seeking to solve) that shows the potential risks and returns. As established by Sheen and Gallo (2013), every good story has characters:

- YOUR STAKEHOLDERS are who will approve or reject your business case. It could be your boss, your boss's boss, or someone else from your organisation's senior leadership team
- BENEFICIARIES are who will benefit from what you're proposing. They can be inside or outside the organisation, and there will likely be several groups
- SUBJECT-MATTER EXPERTS are those that will help you create the case. They will have insight into how the problem will be solved or have expertise which you are lacking (e.g., colleagues from R&D, sales, and marketing, or someone from finance that will help with cost estimates).

A business case that doesn't consider these characters isn't going to get very far, so keep them in mind as you put your business case together. An entire book could be written about how to put a business case together (and many have!), so we are just going to focus on a few select aspects. The key elements for a business case are:

- EXECUTIVE SUMMARY
- THE DESIGN SOLUTION AND NEED
- MARKET SIZE AND SHARE
- COMPETITIVE ADVANTAGE
- INTELLECTUAL PROPERTY PROTECTION STRATEGY
- MARKET ENTRY STRATEGY
- FUNDING REQUIREMENTS
- POTENTIAL RISKS AND RETURNS

These are not exhaustive, and this is not the prescribed order. Remember that a business case is a narrative, so you will need to determine how to make it flow organically and logically.

An executive summary should incorporate three components: the need, the solution and the impact (Sheen & Gallo, 2013). Take the following example for instance:

"NEW ENTRANTS IN OUR EUROPEAN MARKET HAVE SIGNIFICANTLY REDUCED OUR MARKET SHARE" [THE NEED]

WE'VE DESIGNED A NEW SERVICE THAT SHOULD HELP US REGAIN THAT MARKET [THE SOLUTION]

IF LAUNCHED, WE EXPECT SALES TO INCREASE BY 150% IN THE FIRST TWO MONTHS, WHICH WILL ALLOW US TO RECOUP THE INVESTMENT WITHIN TWO YEARS [THE IMPACT]

It's a concise story with a hook, that clearly communicates what you are doing and why you are doing it. Of course, this type of executive summary structure is great for an intrapreneur. An entrepreneur will also have to demonstrate the industry and context.

The DESIGN SOLUTION AND NEED will provide an overview of the design and the need (problem or opportunity) it corresponds to. This could be a product, service, system or process. It should communicate the features and benefits of your design, and clearly articulate how these address the needs of your beneficiaries. Try not to rely on words, a visual representation of your design solution can really help your business case stand out.

MARKET SIZE AND SHARE is where you will identify what segment of the market you will be targeting, along with how prevalent this segment is. It is a good opportunity to identify the different profiles and archetypes in the market and to justify your selection. This is also a great place to discuss your competitors and their positioning, and to demonstrate if the market is growing.

Your COMPETITIVE ADVANTAGE should outline how you will deliver superior value (in relation to competitors) to your beneficiaries. It should have a clear link to the problem or opportunity you are addressing, and answer why an investor or stakeholder would be interested in your design. Ideally, you should also demonstrate why your competitive advantage would be hard to replicate (is sustainable), as this will help the decision makers weigh the potential risks and rewards.

INTELLECTUAL PROPERTY PROTECTION STRATEGY ties in well to the replicability we just discussed. This aspect will help the reader understand how you will protect your idea, and why it would be difficult for competitors to follow in your footsteps. Your intellectual property could be protected through patents, trademark protection, design protection and copyright.

ORGANISATIONAL CONDITIONS

SETTING YOUR BUSINESS UP FOR SUCCESS

Organisations have their own sets of rules, practices and shared understandings, and are typically the platform through which design is practiced. Naturally, for design integration to achieve optimal outcomes in such arrangements, the right conditions need to be present – or at least considered (as previously explained in **CONSIDER**). The four conditions are (Wrigley, Nusem & Straker, 2020):

1. strategic vision – the organisation's long-term strategic goals and intent that include incorporating design
2. facilities – resources and spaces dedicated to design activities
3. cultural capital – an understanding of design and its value, and a capacity to practice it in the organisation's workforce
4. directive(s) – mandate(s) that call for the use of design and hold the organisation's staff accountable to use design.

Each of these conditions influences the uptake of design within an organisation, and collectively they frame how much support design is given. If the conditions are not established in an organisation, a design practitioner may find it difficult to conduct the activities required in a holistic design practice, or to get the traction required to invest in a new design opportunity. Indeed, sometimes the focus of design is on establishing these conditions rather on an actual design output, so that a future for design in the organisation can be established. These conditions are further detailed in the following sections.

STRATEGIC VISION

Strategic vision refers to the organisation's long-term intent, plan or direction, and is often captured in through a mission statement or value proposition (Wrigley, Nusem & Straker, 2020). In essence, it defines what the organisation could and should be in the future – both in terms of its aspirations and what it should represent (Ian, 1992). Internally, an organisation's vision inspires and motivates its people, while externally a vision differentiates an organisation from its competitors (Coulson-Thomas, 1992). A vision, like any other organisational construct, is influenced by a myriad of factors including risk aversion, appetite for change, growth and innovation, and a capacity to balance existing and future business horizons.

A well-defined strategic vision can assist an organisation to pursue the right goals and is a source of competitiveness. Conversely, an organisation without vision is unlikely to lead, and will often need to respond to market trends rather than define them (Wrigley, Nusem & Straker, 2020). A good vision is one that is coherent, powerful, achievable, and aspirational, describes the future focus of the organisation, and establishes what success looks like (Ian, 1992).

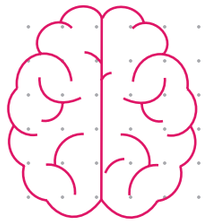
You can define a strategic vision in four general steps (Schoemaker, 1992):

1. Generate a broad range of future scenarios that the organisation may encounter.
2. Analyse the organisation's industry and the strategic segments therein (thus grasping the organisation's position within the market).
3. Understand the organisation and its competitors' core capabilities, so as to understand the sustainability of a proposed strategic vision (and its potential to be replicated by competitors).
4. Identify the strategic options available to the organisation and establish a strategic vision.

The role of the individual is also pivotal in establishing a strategic vision for an organisation. Senior managers should not be the only parties with a role in shaping an organisation's vision, and dialogue with an organisation's people that promotes both intrinsic and extrinsic motivations for a vision can help ensure it's appropriate (Hodgkinson, 2002). A vision that is blind to the organisation's people, and the internal or external environment is one that is likely to fail. It is also important to remember that people and markets change – and so too must the organisation evolve and adapt. Setting a strategic vision is an ongoing process; this is not a 'set and forget' activity (Hodgkinson, 2002).

THINKING STYLES

COGNITIVE VARIETY IS THE SPICE OF LIFE



Innovation requires many different perspectives, ideas and approaches. These are representative of diverse groups of people and have origins in a spectrum of disciplines. We all view the world differently, and this needs to be taken into account when practicing design. Here we describe how design fits within the broader cognitive biases of most firms. We present three thinking styles (systems thinking, design thinking, and creative thinking) to demonstrate how people solve problems. It is proposed that design thinking balances systems thinking and creative thinking by building a bridge between the aims, methods, and results of the other two approaches.

The seminal authority on thinking styles, De Bono (1989), established that the conscious use of different types of thinking for distinct objectives can lead to an increase in competence. He also explains that different styles of thinking can form 'thought-roles' that can be employed as required in a project. Thinking styles are described as the different ways of governing or managing activities in a preferred style to represent and process information (Thompson et al., 2012). It is how individuals prefer to use the cognitive abilities they possess, rather 'what' they are thinking about (Sternberg, 1999). Thinking styles can contribute to innovation and, in some cases, differing thinking styles can help produce a positive organisational culture. Researchers have noted that there is a substantial relationship between thinking styles and risk taking, creativity and innovation (Dean et al., 2008; Ghobadi & Shoghi, 2013).

In recent decades, the pursuit of understanding thinking styles has gained much attention in organisational behaviour and management literature (Broeck, Vanderheyden & Cools, 2003). Thinking styles often differ and include varying approaches to:

- PERCEIVING AND ASSIMILATING DATA
- MAKING DECISIONS
- SOLVING PROBLEMS
- RELATING TO OTHER PEOPLE.

Conflicting thinking styles in a team can result in tension. Naturally, an understanding of others' preferences in thinking style can help facilitate communication, collaboration, and innovation (Leonard & Straus, 1997). An organisation's management must understand that people have different thinking styles. Managers who dislike conflict or only value their own approach (or the organisation's preferred approach) often actively avoid the clash of ideas and styles. This phenomenon is referred to as 'comfortable clone syndrome', where co-workers share similar interests and training and think alike, therefore limiting the potential for innovation to occur (Thompson, Tongo, & Chhabriya, 2012). Leonard & Straus (1997) explain that a new-business development group formed entirely of employees with the same disciplinary background and set of experiences will struggle to innovate, as they will assess every idea with an unvarying set of assumptions and analytical tools.

We explore three approaches to innovation their corresponding thinking styles:

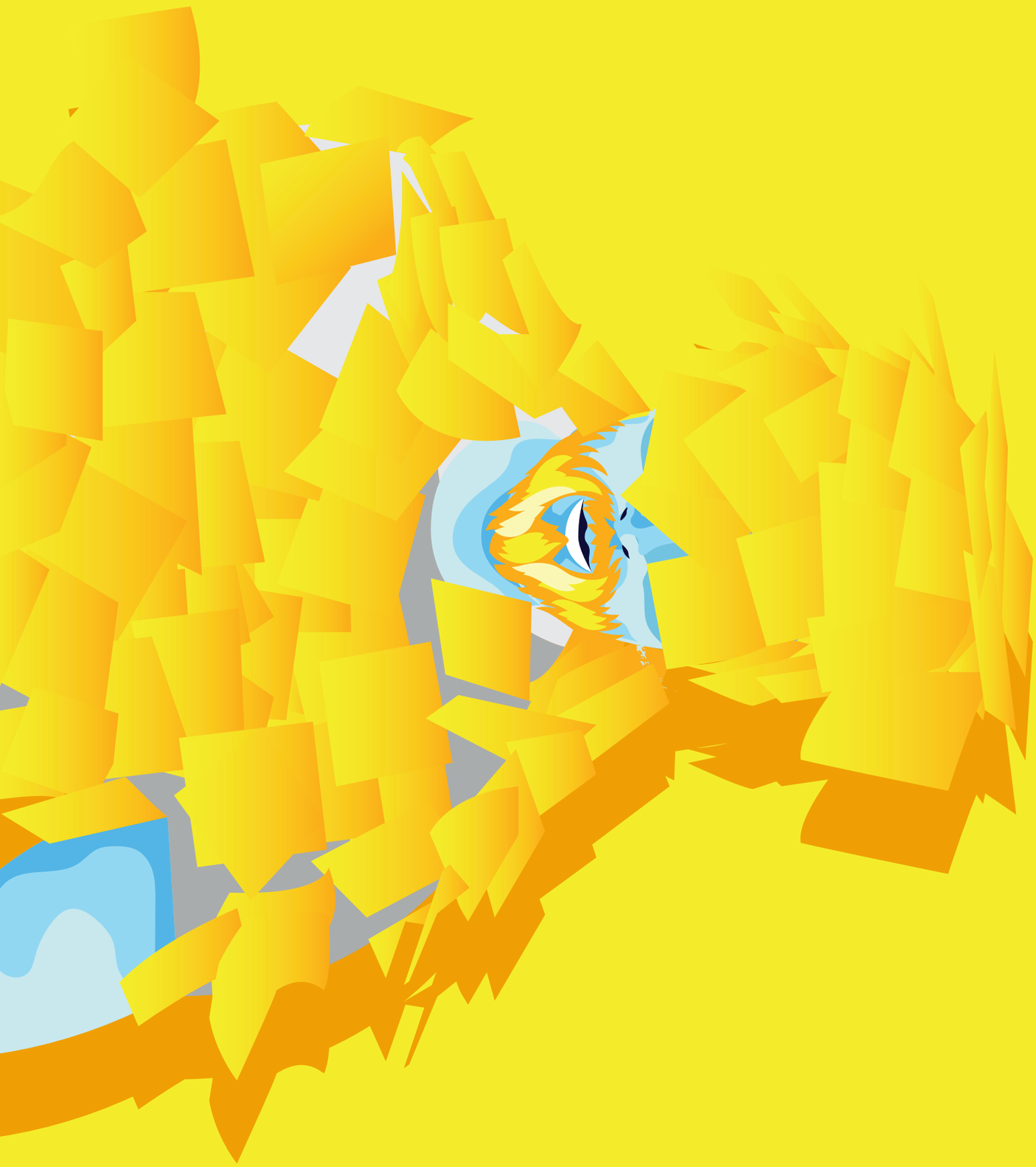
1. SYSTEMS
2. DESIGN
3. CREATIVE.

SYSTEMS THINKING

Systems Thinking, of the three cognitive thinking styles explored here, represents the simplest thinking style for exploration. Unlike Design Thinking or Creative Thinking, Systems Thinking involves a clearly defined, tangible process with proven and predictable outcomes and specific characteristics. Systems Thinking was developed out of the School of Management at MIT. Its history stretches back to the 1950s and is intertwined with business and industry (Jackson, 2009). Since its inception, the thinking style has since permeated the fields of psychology, biology, and sociology. It has been a staple in organisational management science and health circles due to its clear definition, process, technique and simple educational methods.

The style can be defined as an analytical approach in which multiple steps or parts are arranged and rearranged to arrive at a suitable solution. Senge (2006) defines Systems Thinking as a framework for seeing interrelationships rather than things; a process to see patterns and changing dynamics. Senge's definition relates to holistically seeing a process,

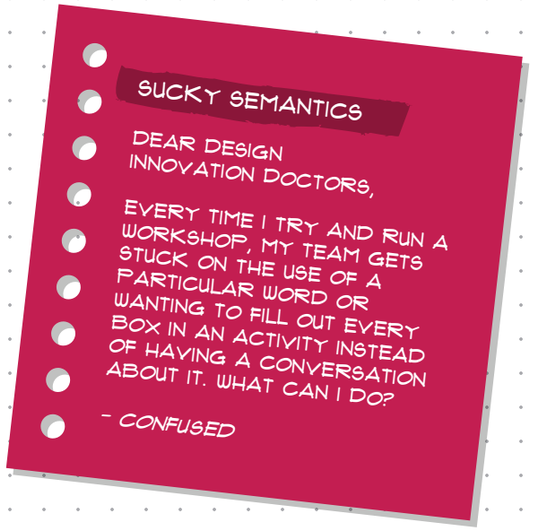
DESIGN
PRINCIPLES



(THEORETICALLY) F.A.Q

DESIGN PRINCIPLES

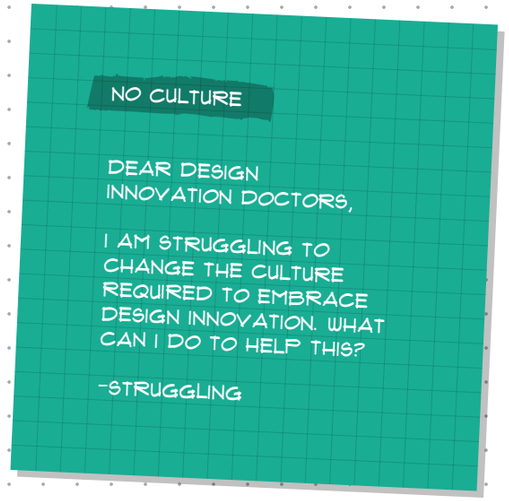
As designers, this is our chance to offer some unsolicited advice. Our work with a plethora of organisations has helped us to synthesise a set of principles to guide practitioners of design innovation. These include prescriptive statements on how to scope and implement design innovation, normative advice on what not to do as well as tips for achieving design integration. They are not a checklist per se, but a set of guidelines to keep in mind as you practice design. Some of them might seem obvious, but in an emerging field clarity never hurts. The original set of principles can be used by a design catalyst but should also be embraced organisation-wide. We have synthesised the principles into a list of problems that you may face as a design practitioner and offer a brief guide for how these might be tackled.



Visualisation methods allow for those in different roles and professions, who use different terminology, to share ideas and brainstorm without being hindered by strict definitions. Visual thinking leads to less time talking (more commonly arguing) and more time doing (collaborating and solving the problem). This is where many of the tools in our book can assist. Tools are not the answer, but they do help facilitate the conversation – allowing the right questions to be asked. Design innovation consists of more than just a toolset. It is the combination of tools, thinking styles, and processes. The value of tools expands beyond their intended use to include facilitation of communication, permission to think creatively, and learning and teaching through visualisation (Straker & Wrigley, 2014). Remember – design tools facilitate the process, not the solution.

DR S's TOP TIP: STAY CLEAR OF BUZZWORDS, STICK TO TERMS THAT ARE WELL-KNOWN AND USED IN THE ORGANISATION.

DR W's TOP TIP: THE DESIGN TOOL IS IRRELEVANT IF YOU DO NOT KNOW WHAT YOU ARE TRYING TO ACHIEVE WITH IT.



Design Innovation can assist (is not a substitute for) cultural change or transformational programs within organisations. These transformations can require a shift in several critical aspects of what defines the business:

- ✕ its culture
- ✕ its organisational structure
- ✕ the way the business interacts

with or engages with its customers.

Such transformations are rarely successful without collaboration across all organisational departments and functions. Early buy-in is required in order for the organisation as a whole to own and accept the change. Design innovation applies a process of understanding a problem coupled with possible solutions to make this happen.

DR S's TOP TIP: START SMALL. START WITH A SMALLER PROJECT, WITH A FEW KEY PEOPLE. THIS WAY IT IS LESS RISKY AND YOU WILL BE ABLE TO DEMONSTRATE THE VALUE OF THE PROCESS.

DR N's TOP TIP: THE PROOF IS IN THE PUDDING. IF YOU'RE HAVING TROUBLE GETTING PEOPLE TO EMBRACE DESIGN THEN YOU NEED TO DEMONSTRATE ITS VALUE (E.G., THROUGH A LOW-RISK DESIGN PROJECT).

DR W's TOP TIP: IF YOU CAN FIND ONE GOOD PERSON WILLING TO JOIN A COALITION OF THE WILLING THIS IS A GREAT START!

Design Innovation and Integration is more than just a toolkit; it is a guidebook for the industry leaders of tomorrow, providing a holistic understanding of the approaches, practices and tools required to integrate design strategically within an organisation. Novel solutions are required to meet complex problems, yet how to make these solutions a reality is rarely addressed. This book expands on existing design toolkits to provide an understanding of the principles and methods that underpin such tools and align them with organisational strategy. The aim is not to equip readers with a stocktake list of design tools, but to assist them to learn how to apply, adapt and re-mould tools to best suit their needs. It also demonstrates the more complex process of design integration, highlighting common pitfalls and opportunities. Drawing on over 10 years of independent research, authors **Straker, Wrigley,** and **Nusem** share experiences and outcomes (along with personal repartees) from their research, teaching and pet projects. The two key parts of this book, Design Innovation and Design Integration, equip the reader with an understanding of the theory encompassing these two areas. This book can be leveraged by readers seeking to develop their own design approach and to implement design in their organisation. If you are looking to grow your influence and create an environment in which design innovation can flourish, then this book is for you.

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