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101

Design Methods

A Structured Approach For Driving Innovation
In Your Organization

INTRODUCTION

Innovation (n): a viable offering that is new to a specific context and time, creating user and provider value

As firms like Apple and Google top the headlines and grab the attention of executives everywhere, just about every professional magazine, journal, conference, and meeting room today is awash with the term “innovation.” Innovation has arrived, and it has made a huge splash in the world of business. Except that it hasn’t. Despite the fact that there is so much attention on the strategic value of innovation, very few organizations know how to make it a reliable and repeatable practice. Business history speaks for itself. Research shows that less than 4 percent of the innovation projects undertaken by businesses are proven successful according to a source from Doblin Inc. The remaining 96 percent of the projects fail.

If innovation is so important, why aren’t more organizations better at it? Why are innovation failure rates still this high? To begin with, there are four major assumptions organizations make that prevent them from achieving systemic innovation. Let’s examine each of these assumptions one by one, and discover why they are incorrect and why there might be a better way of reliably achieving major innovation.

Assumption: Innovation as it is currently practiced is good enough.

Reality: Current innovation practices don't reliably deliver breakthroughs. There is a lack of a set of reliable tools and methods for creating real breakthroughs rather than incremental or random improvements.

When an innovation team is asked to do more than develop incremental improvements to an offering, but rather develop leapfrog or disruptive innovations, many of their existing practices and tools simply no longer apply. The realization of a need for new ways of working is likely to make teams feel directionless. For example, a simple 2×2 position matrix is a widely used tool to plot a market or opportunity space; but how should a team use this tool when the innovation sought is so radical that competitors have yet to emerge, the problems aren't fully understood, and the opportunities are still undefined?

Assumption: Innovation is for executives.

Reality: Practitioners "on the ground" are most often the source of breakthrough ideas, but they need structures and processes to help them plan and define innovation.

Most of the current thinking about innovation serves as a reminder to business executives that innovation is a necessary part of strategy, goading them to keep innovating with well-known inspirational examples like the Apple iPod. While general theories, strategies, and market approaches can be seen as critical steps toward innovation, they are hardly the only steps. Once an innovation initiative is defined, teams of managers, designers, researchers, marketers, and engineers must figure out how to act on it. The team must create a plan for bringing to market something that no one has ever done before. What new and different path should it follow? What stages, activities, and skills will be needed? Innovation must be mastered at the level of "how do we do it?" as well as the level of "what do we do?"

Assumption: Innovation is for practitioners.

Reality: Innovation isn't just for practitioners. Practitioners need to work with executives to be able to integrate innovation tactics into a larger strategy.

Innovation requires a much broader scope of understanding than other business practices. The designers and technologists developing new offerings must not only know how to innovate on a tactical level, they must also comprehend the strategic objectives and wider implications of their work. In the old model of incremental innovation, strategy was conveyed to practitioners in the form of business requirements, objectives, and specifications. Documents clearly outlined the boundaries of the solution, described the end result, and set out criteria for success. But, in the emerging world of leapfrog and disruptive innovation, practitioners must be empowered to question previously held assumptions, invert and transcend the tenets of their disciplines, and explore unaddressed market needs and opportunities. This requires them to possess a deep understanding of the business strategies behind their work, of where and why the company is trying to innovate in the first place.

No existing approaches draw connections between what practitioners do and how their actions affect strategy. This disconnect results in a situation in which practitioners change boundaries and reverse assumptions either without regard, or without comprehension, of whether their ideas fit with a rational, profitable strategy. Practitioners need an encyclopedia of tools and activities; they also need a guidebook that integrates these tools and activities into the theory and strategy of innovation.

Assumption: "Innovation planning" is an oxymoron.

Reality: Measured, scientific approaches to innovation do exist, and can make it a systematic process.

When organizations think of management, they think of control, of processes that can be forecasted, planned, systematized, and guided to yield predictable results. When they think of innovation, however, these attributes are not likely to come to mind. It is a common belief that innovation is about simply "doing things differently," or "thinking outside the box" where the normal rules of management don't apply. Few organizations, however, can afford to invest in a practice that defies control and

produces valuable breakthroughs in a random, nonlinear, often untimely fashion. Innovation represents a new and important capability, much too important for managers not to understand how it can be systematized and structured. Elusive and complex business practices can be reinvented when approached as a science. For innovation to become more widely successful, organizations require a new approach to practicing it.

The practice of innovation needs to be mastered by organizations attempting to harness its power. Innovation is a discipline. It is not magic. It is something organizations can choose to practice, improve, and excel at. This book is about how to engage in that practice.

Four Core Principles of Successful Innovation

Analyzing some of the most innovative companies in the world, and studying hundreds of successful innovations, there emerge four principles successful innovators tend to follow. With these principles as a foundation, organizations can begin to develop mastery of a new, effective innovation practice.

PRINCIPLE 1: Build Innovations Around Experiences

Experience can be defined as “the act of living through events.” Although the term “user experience” (or UX) has become associated with the software and information technology industries, user experience is a key factor in the success of any type of offering. Every company and organization in some measure creates or affects peoples’ experiences. Focusing on the nature of those experiences provides the perfect starting point for innovation.

Imagine yourself as an employee of a shoe company charged with creating successful new innovations in running shoes. You would normally start by studying shoes and thinking about how to improve their performance, comfort, and style in order to produce a better product. Since competing companies do exactly the same thing, their improvements more or less match your own. However, by looking at the larger context of “running shoes,” the wider range of activities your customers engage in related to running, innovation opportunities are greater which in turn afford new ways of competing.



Athletic shoe giant Nike maintains a market-leading competitive position not by focusing on creating a better shoe, but by designing a better athletic experience. Beyond innovations in materials, aesthetics, and performance, the company has developed innovations that extend the runner's experience. Embedded sensors in shoes enable runners to capture, monitor, and upload data about their running to measure their progress over time. Similarly, Nike provides online tools to help runners plan runs and choose routes. The result of these kinds of innovations has helped Nike remain a market leader against intense competition. In short, Nike's innovations have extended beyond just a better shoe to supporting peoples' activities, in running, sports, or regular use, giving people an engaging experience around wearing shoes.

In most organizations, innovation does not work this way. Instead, it starts with a focus on their offerings. Organizations try to understand why consumers purchase their current product and how they use it. The typical methods used to find this information are surveys, focus groups, interviews, home visits, and usability tests. Consumer researchers seek to answer a host of questions that are primarily about the product. What improvements can be made to it? Why did people buy this product over another? What additional features would cause them to pay more for it? As a result, innovations center on the product itself.

Experience-focused innovation uses a different approach. Emphasis is not on the product, but on its users. The focus shifts from the things people use,

to what they do—their behaviors, activities, needs, and motivations. The most successful innovations are built not only on detailed knowledge of a product or technology, but also on what the organization learns from studying peoples' overall experience. In studying peoples' experiences, innovators should focus not only on the obvious experience of "using the product," but on the host of activities that surround the context in which it is used including: recognizing a need, discovering a product or service to meet that need, learning about it, using it, and extending its use (e.g., sharing, customizing, servicing, upgrading). Organizations need to expand their concept of product performance beyond understanding the attributes, functions, and features of an offering, to understanding its users' motivations, needs, and beginning-to-end experience.

Thinking about and understanding the extended user experience can lead to great innovations; but it's far from easy. Design innovation employs the social science of ethnography—the collection of data about people through direct observation and interaction with them—to develop a deeper understanding of people. While innovation should not ignore traditional market-research methods like focus groups and surveys, ethnographic observation puts a premium on the valuable and often unexpected insights about people that result from observing them directly in the context where the organization's offering (product, service, message) will be used. This approach changes the focus from what people say to what they actually do.

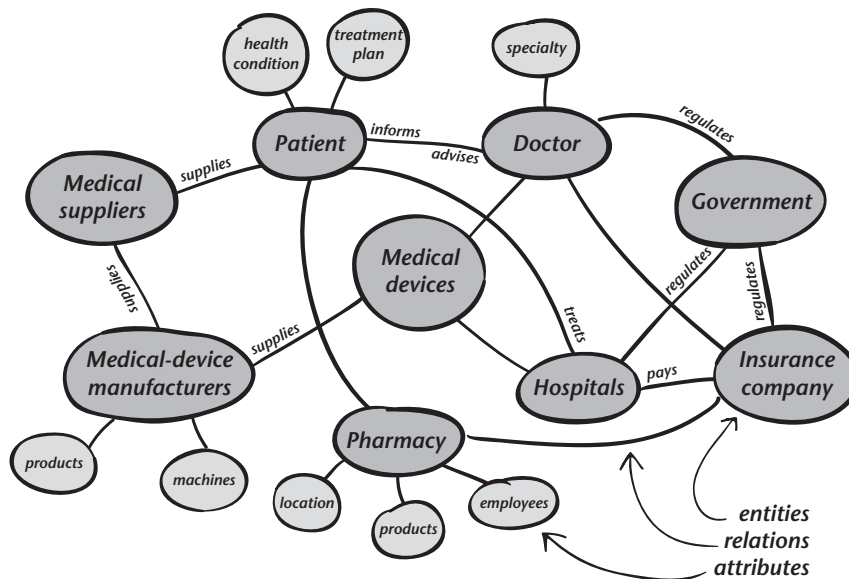
PRINCIPLE 2: Think of Innovations as Systems

An offering, whether it is a product, a service, or media/message, naturally belongs to a larger system of offerings, organizations, and markets. A “system” can be defined as any set of interacting or interdependent entities that form an integrated whole which is greater than the sum of its parts. Innovators who understand how this larger system works can better create and deliver offerings with high value.

A traditional approach to designing a healthcare-related product would be to focus on product performance. By placing the product in the context of the overall healthcare system, we can develop a greater understanding of the product’s value in relation to all the components of the system, such as the patient, doctor, hospital, home, pharmacy, medical device manufacturer, medical supplier, insurance company, pharmaceutical company, government, and so forth. The attributes that define these components can also be described; for example, the patient’s health condition, treatment plan, and other

information similar to what is found in the patient’s electronic health record. Further, we can also think about the flows that happen between components, such as a patient’s payments to the insurance company or the information that patients and doctors exchange. Thinking about your product in relation to the healthcare system not only helps understand system-level implications for the design of the product, but also reveals new opportunities for innovation that otherwise you would not have considered.

Going even further, organizations can pursue simultaneous innovation in several parts of the system. Offerings based on integrated innovation of multiple parts of a system are likely to have greater value, and tend to confer massive competitive advantage for the company creating them. The classic example of this principle is Apple. The iPod and iTunes, the iPhone, the App Store, and later the iPad, all reflect Apple’s intentional systems innovations. In addressing innovation at a systems level, the company reinvented the music business, the mobile devices sector, and the tablet computers industry.



PRINCIPLE 3: Cultivate an Innovation Culture

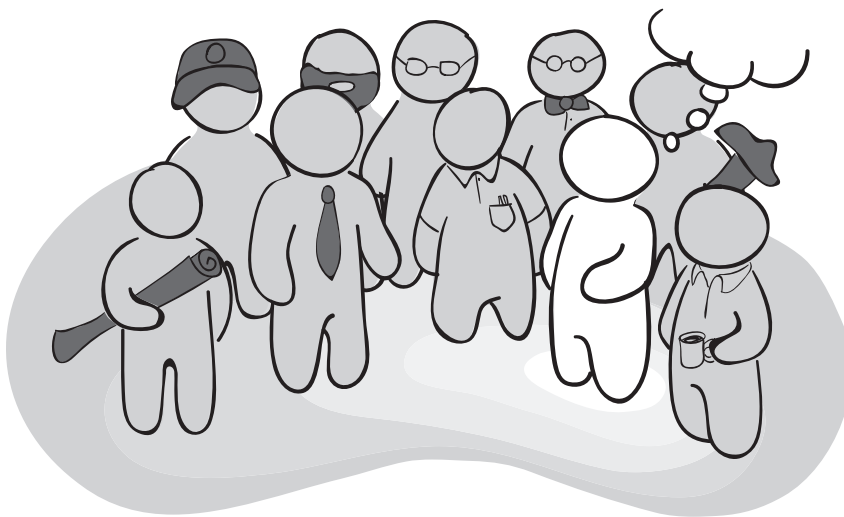
The story of Apple's successes through design innovation is well known, and not very surprising. Apple is a relatively young company, founded and built on the idea of user-centered design of technology. Although now an established Fortune 500 firm with 60,000 employees worldwide, it has inherited and maintained much of its organizational culture from its days as a Silicon Valley start-up. Its founder-CEO, Steve Jobs, was a natural innovator and showman who knew that design is one of the company's primary differentiators. In short, a company like Apple has many built-in organizational and cultural advantages that allow it to pursue a design innovation strategy.

Less well known than Apple, but equally important, are the stories of large, long-established companies that have not historically relied on a design innovation strategy, but find themselves needing to adopt one. Procter & Gamble's transformation of its innovation strategy under the leadership of A.G. Lafley is a prime example. In 2000, the household products giant's stock was collapsing as it faced alarming declines in growth and threats from a plethora of private-label brands with increasing access to the same production technologies and markets. Facing the decision of whether to cut costs to

compete head to head with private-label brands or pour additional resources into R&D and marketing to rebuild margins, Lafley boldly chose to do both. One of his key strategies was to inject user-centered design innovation into P&G's organizational "DNA."

This principle is about cultivating a mindset among people in an organization that everyone is actively engaged in innovation on a daily basis and that everyone's actions can add up to the overall cultural behavior of the organization.

Innovation practice is a collaborative process and people with competencies in different fields need to come together to make the process thorough, inclusive, and valuable. Engineers, technical experts, ethnographers, managers, designers, business planners, marketing researchers, and financial planners, all need to come together in a shared mental space. Most recently, even end users and community members are also brought into the innovation process. Although achieving this level of collaboration is a huge challenge, organizations can take small steps that eventually can lead to big positive changes in the innovation culture of organizations. One such step is to conduct frequent interactive work sessions and brainstorming activities among people with diverse expertise.



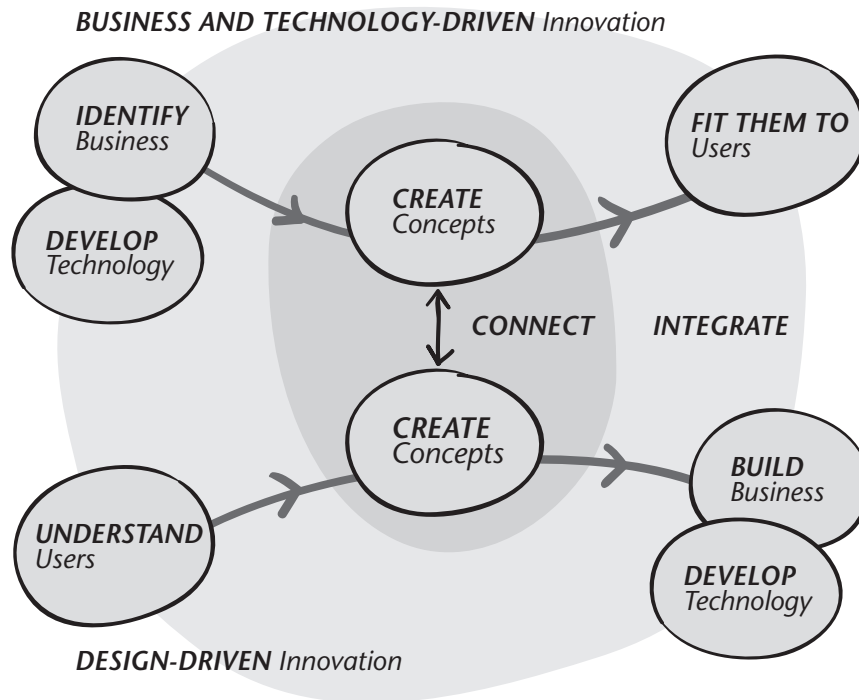
PRINCIPLE 4: Adopt a Disciplined Innovation Process

To reiterate: “innovation planning” is not an oxymoron. Successful innovation can and should be planned and managed like any other organizational function. It is possible to create innovations using well-developed processes and repeatable methods, all in the service of supporting and extending the other three principles of successful innovation—understanding experiences, thinking in terms of systems, and fostering an innovation culture. A high degree of discipline is necessary for these processes and methods to work, but when they do, the probability of creating successful innovations can increase dramatically. Simply recognizing and understanding that innovation can and should be planned is the first, critical step.

It is important to note that the innovation process exists in parallel to many other equally important processes in

an organization and needs to integrate well with them. Innovators need to synthesize processes from design, technology, business, and other areas. For example, typical technology- and business-driven innovations start with the identification of a business opportunity or a technology possibility followed by concept development and then offering them to users. Design-driven innovations start by understanding people, developing concepts, and then conceiving businesses around those concepts. Knowing when and where all these processes touch and interact is key to successful collaboration in organizations.

Companies need to understand effective and compatible design methods to practice design innovation collaboratively, reliably, and repeatedly. Innovations conceived by carefully integrating design processes with business and technology have a better chance of achieving high user value and economic value, leading to greater adoption and market leadership.



A Model of the Design Innovation Process

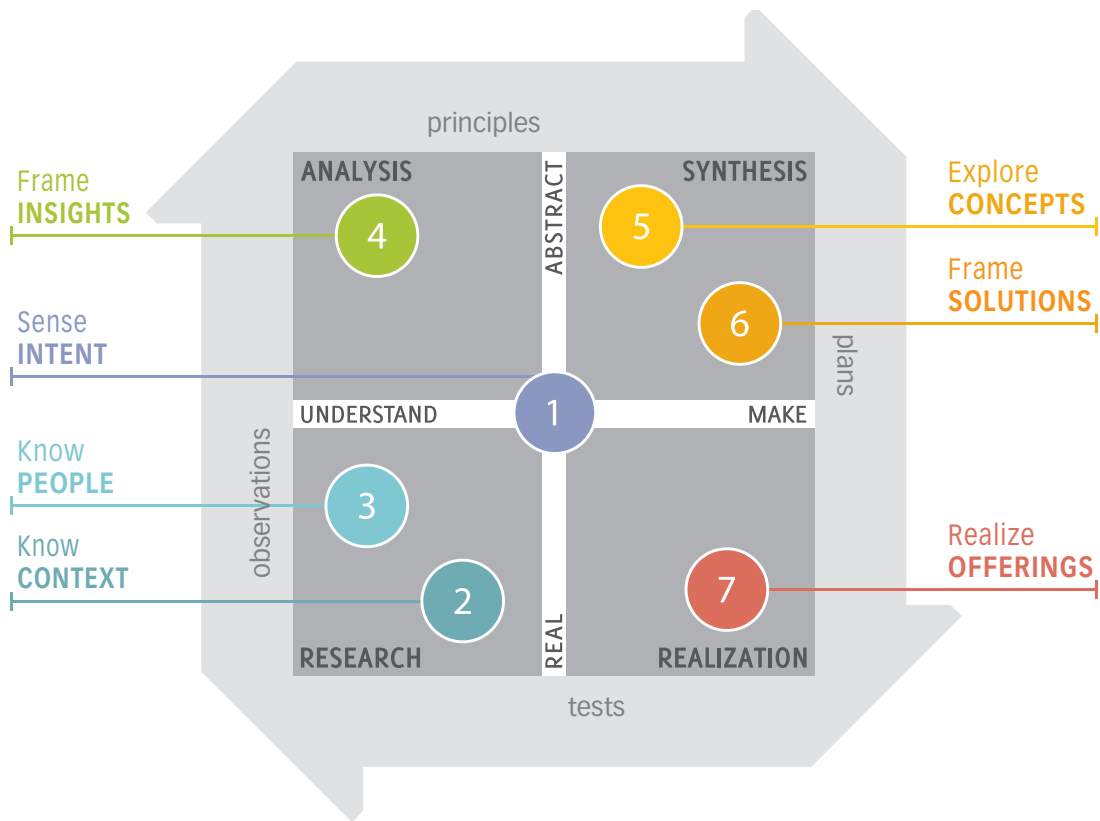
The reasons why organizations need a reliable innovation process, and some of the general principles that underlie successful innovation, were discussed earlier. In the remainder of this book, a model design innovation process is presented with discussion of 101 design methods innovators can apply throughout that process. These design methods evolved out of many years of studying cases of innovation projects and successfully applying the four core principles discussed earlier—building innovations around experiences, thinking in systems, cultivating an innovation culture, and adopting a disciplined process.

The Design Innovation Process

The design innovation process starts with the real—we observe and learn from the tangible factors from real-world situations. Then we try to get a full understanding of the real world by creating abstractions and

conceptual models to reframe the problem in new ways. Only then do we explore new concepts in abstract terms before we evaluate them and implement them for their acceptance in the real world. This requires fluidity in our thinking between the real and the abstract.

Just as with nearly any creative or exploratory process the design innovation process moves back and forth through modes of activity, oscillating between poles of Real versus Abstract and Understanding versus Making. A 2 × 2 map illustrates the design innovation process. The lower left quadrant represents “research,” about knowing reality. The upper left quadrant stands for “analysis,” since this is where we process the information about reality in abstract terms and try to come up with good mental models to drive innovation. The top right quadrant is about “synthesis,” during which the abstract models developed during analysis are taken as a basis for generating new concepts. And lastly, the lower right quadrant defines the “realization” of our concepts into implementable offerings. All these four quadrants—

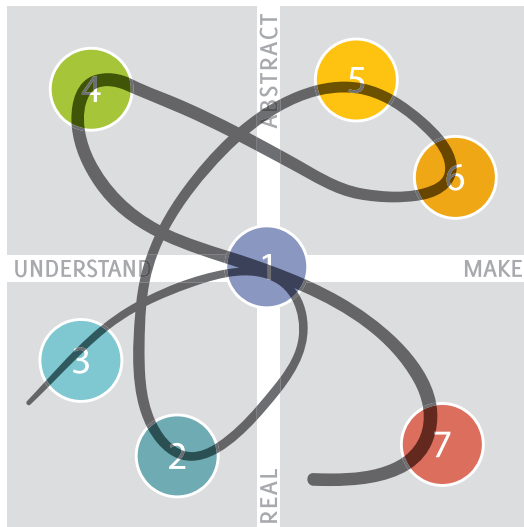


research, analysis, synthesis, and realization—combined together is a well-formalized process model with which to drive innovations in your organization.

Within this framework reside seven distinct modes of activity for design innovation: Sense Intent, Know Context, Know People, Frame Insights, Explore Concepts, Frame Solutions, and Realize Offerings. (These seven modes, incidentally, form the structure not only of the innovation process, but also of the rest of this book.) Understanding the outlines of the innovation process can greatly help innovators, by providing a guiding structure and sequence for any given project, and ensuring that the team has the right information and knowledge at the right time.

Process Is Nonlinear

Although the idea of a process implies a linear sequence of events, this can be misleading. Many projects are actually nonlinear. For example, a project may begin with a sudden brainstorm (Explore Concepts) and then proceed “backwards” to research and analysis to validate and improve the idea, followed by further exploration and iteration.



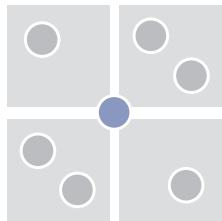
Process Is Iterative

The process is also iterative, requiring many cycles through the process, and often through one or more modes (cycles within cycles), rather than being a direct sequential push. A project might start with an intent and some contextual research; then follow several consecutive rounds of user research and analysis, with initial insights being fed back to users for validation; then several rounds of concept exploration, user feedback through prototype testing, refinement of analysis, and then further exploration, further prototyping, and so forth. The number of repetitions and loops in any given innovation project is largely a function of the project's budget and scope. In some cases, multiple loops may be necessary, in others merely desirable, and in still others totally unfeasible. Doing more iterations generally leads to higher-value, more successful innovations—although not if pursued for too long or without discipline.

Seven Modes of the Design Innovation Process

As discussed previously, there are seven distinct modes of the design innovation process, each with its own goals and activities. Each mode will be introduced, and then covered in detail in its own separate chapter

Mode 1: Sense Intent

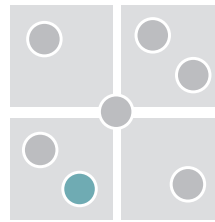


Early on in the process we are in this mode of figuring out where to start. Before jumping straight into a project we take a pause and consider the changing world around us. We look at all the changes happen-

ing in business, technology, society, culture, policy, and the like. We gather the latest happenings, cutting-edge developments, and latest news. We study the trends that can affect our topic area. We look at the overall effects of these changes. All these offer us a way to reframe our initial problem and look for new innovation opportunities. It helps us think of an initial intent about where we should be moving.

- Gathering the latest: Searching for the latest happenings, cutting-edge developments, and the latest thinking going on in the field
- Mapping overviews: Taking a step back from details and creating high-level views of the changes going on in the topic area
- Mapping trends: Getting high-level overview of relevant trends in business, technology, society, culture, and policy
- Reframing problems: Framing-up challenges differently based on the associated trends and conditions and finding opportunities where the organization could create high-value innovation
- Stating initial intent: Outlining hypotheses of how the organization could take advantage of innovation opportunities

Mode 2: Know Context

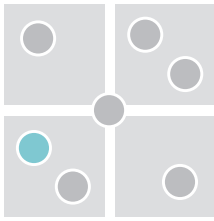


In Know Context we study the context—the circumstances or events that affect the environment in which our innovation offerings (products, services, experiences, brands, etc.) exist or could exist. We study how our

offerings perform in the market. We focus on offerings that are similar to ours and see how they perform. We study our organization. We look at all the competitors and their evolving strategies. We learn about our organization's relationship to our complementors in the industry. We find out if government policies and regulations have an effect on our innovation topic. Broadly, in this mode, we pay attention to what is transforming our innovation context including society, environment, industry, technology, business, culture, politics, and economics.

- Planning for research: Creating a work plan for understanding the context based on available time, resources, methods, and expected deliverables
- Searching knowledge base: Searching through large quantities of data from existing sources to find emerging patterns
- Mapping evolution: Creating overviews of key industry developments, eras, timelines, and likely futures
- Doing comparisons: Creating overviews showing organizations in relation to industry networks, competitors, and analogous organizations
- Diagnosing conditions: Gaining perspective on the organization's capabilities, their performance, and industry patterns of innovation
- Asking experts: Communicating with experts in the field and understanding their analytics, opinions, and recommendations

Mode 3: Know People

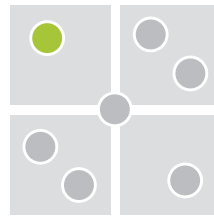


In this mode our goal is to understand people (end users and other stakeholders) and their interactions with everything during their daily lives. In this mode traditional market research techniques are most

useful when a new offering is already defined. But to explore a person's unmet or unspoken needs we must have more powerful methods and tools. We use observational and ethnographic research methods to learn about people in ways that are different from interviews or focus group studies. A key objective in this mode is to extract the most valuable insights from our observations. An "insight" here is defined as an interesting revelation or learning that emerges out of observing peoples' actual behavior. Insight is an interpretation of what is observed, and is often the result of asking the question "why?"

- Planning research: Deciding on research objectives, target users, fieldwork protocols, budgets, and timeframes
- Observing people: Recruiting participants, doing fieldwork, documenting people, their activities, and interactions with objects and environment
- Asking people: Conducting surveys, discussing findings with users, and gathering feedback and validation
- Engaging people: Having users participate in activities, conversations, and interactions with researchers
- Organizing finding: Collecting observations and research data, tagging with keywords, and identifying gaps in research

Mode 4: Frame Insights

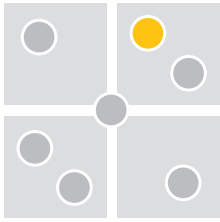


After conducting research, the next challenge is to bring structure to what has been found and learned from the previous modes. We sort, cluster, and organize the data gathered in the previous three modes and

begin to find important patterns. We analyze contextual data and view patterns that point to untapped market opportunities or niches. Finding insights and patterns that repeatedly emerge from multiple analyses of data is beneficial. Therefore in this mode we use a mix of different kinds of methods in order to gain multiple perspectives of the context for a fuller understanding. Guidelines or principles that are generated in this mode help us move to the next mode for exploring concepts and framing solutions.

- Finding insights: Identifying patterns in research results about people and the context and looking for insights
- Modeling systems: Diagramming the context as a system showing its components, relationships, attributes, and value flow
- Finding clusters: Sorting data in different ways, finding groupings, and revealing high-level insights
- Finding patterns: Visualizing research findings as diagrams and revealing hot spots, gaps, and overlaps
- Making profiles: Defining attributes of key stakeholders and other parts of the system
- Mapping flows: Visualizing how value flows in networks of producers, consumers, suppliers, and other stakeholders
- Mapping experiences: Diagramming user journeys in space and time, discovering pain points, and showing opportunities
- Making frameworks: Summarizing insights and translating them into frameworks and guidelines to drive concept generation

Mode 5: Explore Concepts

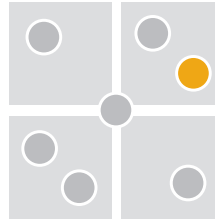


In this mode we do structured brainstorming to identify opportunities and to explore new concepts. We use the insights and principles framed earlier as the starting places to generate concepts. We ensure that fresh

and bold ideas are generated through collaborative sessions. Team members build on each other's concepts while carefully postponing critical evaluation. Further, by basing our concepts on the results from previous modes, we ensure that the concepts are defensible and grounded in reality. Concepts for products, services, communications, environments, brands, and business models and others are typically explored in this mode. Even at this early stage of exploration, we construct rough prototypes, either to focus team discussions or to get early user or client feedback.

- Framing concept space: Converting insights to design principles, reframe assumptions, and making hypotheses for concept generation
- Defining concepts: Brainstorming concepts within the widest solution space permitted by design principles, gaining inspiration from metaphors, and visualizing concepts
- Organizing concepts: Sorting, recombining, and dividing concepts into logical systems and groups; collecting and archiving concepts for future reference
- Communicating concepts: Sketching, diagramming, prototyping, visualizing, and narrating concepts to understand, validate, and convey their value

Mode 6: Frame Solutions

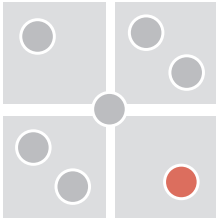


In this mode, we build on the large set of concepts that have been developed earlier by combining them to form systems of concepts, named "Solutions." We evaluate concepts and identify the ones that

bring the most value to stakeholders (primarily users and businesses). The most valuable concepts are combined into systems of concepts that work together well and reinforce each other's value. We also evaluate concepts based on their compatibilities to help form holistic solutions. We ensure that the concepts and solutions are organized into useful categories and hierarchies. We iteratively prototype solutions, and test them in real-world settings. In this mode descriptions of solutions are turned into depictions to give the team, the users, and the client(s) a visceral sense of "what could be."

- Generating options: Combining the many point-concepts explored in Explore Concepts mode into a set of solution options for further selection
- Systematizing concepts: Clustering and synthesizing concepts into coherent systems, planning lifecycles of offerings, and creating roadmaps
- Evaluating concepts: Scoring, voting, and ranking concepts against design principles, cost/benefit, viability, and feasibility
- Communicating solutions: Refining sketches, diagrams, prototypes, visualizations, and narratives of proposed solutions
- Organizing solutions: Sorting, collecting, and archiving solutions for easy access, including use by other teams and projects

Mode 7: Realize Offerings



Once potential solutions are framed and prototypes tested, they need to be evaluated to move to implementation. In this mode, we ensure that the solutions are purposefully built around peoples' experiences and

can provide real value. It is also important to make sure these solutions add economic value for the organizations producing them. Once we establish high-value solutions, implementation plans follow. For this, design and business innovators collaborate to define viable strategic directions. We create roadmaps to show the speculated progression of solutions in distinct phases. These roadmaps are shared with the stakeholders, showing everyone involved the steps necessary to implement the solution. A business case is prepared for prompting further action with clearly defined and specific initiatives the organization will follow to facilitate implementation.

- Building prototypes: Developing prototypes to test details, feasibility, viability, and technical specifications
- Defining strategies: Determining market positioning, platforms, partners, and business plans key to the innovation's success
- Defining tactics: Identifying capabilities necessary to achieve strategies and plan development trajectory
- Developing initiatives: Gathering resources, constructing budgets and schedules, hiring teams, and creating plans for pilots and launches

Understanding Methods

Understanding the entire design innovation process and life cycle is an initial requirement to achieving reliable innovation. However, an organization also must understand the specific activities and methods it can deploy at different points throughout the process. This may include things as simple as a 2×2 position map, like the images shown in this Introduction, or as complex as a proprietary software system for analyzing and sharing innovation insights and protocols. Just as a master carpenter will expertly select a different set of tools depending whether he is building a house or a chair, the master innovator needs to be familiar with a variety of methods in order to choose them effectively for a given project.

The seven modes of the design innovation process form the structure for the remainder of this book. Chapters 1 through 7 elaborate on the key activities in each mode, and describe in detail over 100 different simple, powerful, highly flexible methods innovators can use to progress through the innovation process. Each method description includes an example illustrating how that method was used in that project during the process. These example illustrations range from exploratory class projects to well-known corporate cases, highlighting the broad applicability of this process to many different types of innovation projects.