Digital Transformation & Design Thinking, Part I: Solutions to Your Company's Wicked Problems

by Gustav Toppenberg and Biren Mehta

Design is not just what it looks like and feels like. Design is how it works.

— *Steve Jobs*

Applying the right lens to understand a market opportunity or threat is vital for an executive needing to guide their organization toward a profitable and successful path. The seemingly exponential pace at which technology, consumer behavior, and economic conditions change are all part of a recognized "new norm" that any incumbent or emerging company must consider. While many see this new norm as an unwelcome obstacle, given the traditional analytical and systematic lens and approach for making decisions, some indeed recognize that these changes have led to complex challenges that call for innovative, nimble solutions, not business as usual. To discover these new opportunities and reshape their organizations for digital transformation, many companies have turned away from traditional analytical thinking toward *design thinking*, a method that does not immediately consider a solution up front, but instead examines both present and future conditions and the parameters of the problem, ultimately exploring alternative solutions.

In this *Executive Update*, the first in a three-part series, we focus our attention on the intersection of design thinking (as a method for understanding opportunities through a different lens) and digital transformation (the use of technology to radically improve performance or reach). In many cases, digital transformation is employed in an effort to create a competitive advantage, which in today's business environment can at best be considered a transient advantage because sustaining anything for a long period of time is highly unlikely. Here in Part I, we show how the two concepts — design thinking and digital transformation — intersect, how they impact many different types of organizations, and how executives can leverage design thinking concepts at different stages to change their approach to decision making and the implementation of new, innovative ideas.

Moving Beyond the Industrial Revolution: From an Analytical to User-Centric Lens

Have no fear of perfection — you'll never reach it.

— Salvador Dali

Analytical and systematic thinking has served companies in many industries and markets well for the past century as executives have helped their companies overcome and solve complicated problems. However, they generally faced those problems at a time when technological change occurred at a more stable and predictable pace. Problems developed over time, were more linear, and were somewhat well defined and understood. Today's reality — driven by the pace of exponential technological change — is much different. Technological change drives down the established barriers to market and between markets, making it possible for emergent companies to compete with incumbents overnight and for companies to enter new markets much more easily. This is what we refer to as digital transformation.

Companies with executives who understand this paradigm shift across sectors use design thinking techniques — also known as human-centric design — to discover how customers and employees interact with the products and services the company offers and how their design affects customer experience. The process of design thinking, which we explain in more detail in the next section, also reveals customers' drives and desires, as well as the pain points that prevent customers from obtaining the expected benefits. The shift with design thinking is a change from the "why" something works to the "how" something works and, ultimately, the impact the "how" has on the consumer or user. Using design thinking techniques helps companies discover intended and unintended uses of their products and services and can help accelerate digital transformation by helping executives understand and prioritize where it is most critical to deliver value. Design thinking helps companies identify real issues they never knew existed and leads to innovative digital and non-digital solutions never before imagined.

The Nitty-Gritty of Design Thinking

Design thinking is a process for creative problem solving.

— David Kelley, IDEO founder

To understand how design thinking can help accelerate digital transformation, we first present what we believe to be a helpful summary of design thinking as a methodology and approach. We largely credit David and Tom Kelley, who started the global design and innovation company IDEO as part of their work at Stanford University, where they also created the [Hasso Plattner Institute of Design](#) (aka d.school) for today's technology and innovation environment. The concepts of design thinking have their origins back in the 1950s with the development of creativity techniques; new design methods in the 1960s led to the idea of design thinking as a particular approach to creatively solving problems. This [summary](#) of design thinking by Tom Brown, CEO of IDEO, is helpful for those new to the ideas:

Design thinking utilizes elements from the designer's toolkit like empathy and experimentation to arrive at innovative solutions. By using design thinking, you make decisions based on what future customers really want instead of relying only on historical data or making risky bets based on instinct instead of evidence.

Design thinking as a methodology has been documented and diagrammed in many different ways over the years. The IDEO approach is the most referenced and leveraged, so we will use it as our reference for this *Update* series. The approach from IDEO includes three main stages: inspiration, ideation, and implementation — encouraging those who leverage the approach to let creative solutions to problems flow as those involved diverge and converge around ideas and designs. The three stages of the design thinking approach can be further broken down into six steps, which we will elaborate on later in this *Update* series, to determine how design thinking can help accelerate digital transformation. Those six steps are:

1. **Frame a question.** Identify a driving question that inspires others to search for creative solutions.

2. **Gather inspiration.** Inspire new thinking by discovering what people really need.

3. **Generate ideas.** Push past obvious solutions to get to breakthrough ideas.

4. **Make ideas tangible.** Build rough prototypes to learn how to make ideas better.

5. **Test to learn.** Refine ideas by gathering feedback and experimenting forward.

6. **Share the story.** Craft a human story to inspire others toward action.

The steps should be thought of as different parts of the process that helps executives and designers uncover new insights and information about the problem; it is likely that there will be a need to iterate back and forth between the steps. As David Kelley says, design thinking is not a linear path: "It's a big mass of looping back to different places in the process."

Digital Transformations as Wicked Problems

We cannot solve the problems we have created with the same thinking we used in creating them.

— Albert Einstein

When considering the framing above regarding the paradigm shift from predictable to unpredictable market changes and the potential to leverage design thinking, it is also helpful to change the lens on how we view digital transformation. We choose to see the elements of digital transformation as what Horst Rittel and C. West Churchman in the 1960s referred to as a "wicked problem."

By their definition, a wicked problem is one that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognize. The use of the term "wicked" here has come to denote resistance to resolution, rather than evil. Another definition is "a problem whose social complexity means that it has no determinable stopping point." Therefore, because of complex inter-dependencies, the effort to solve one aspect of a wicked problem may reveal or create other problems, or potentially new unseen opportunities.

In 2005, author Jeffrey Conklin described the six characteristics of wicked problems:

1. The problem is not understood until after the formulation of a solution.

2. Wicked problems have no stopping rule.

3. Solutions to wicked problems are not right or wrong.

4. Every wicked problem is essentially novel and unique.

5. Every solution to a wicked problem is a "one-shot operation."

6. Wicked problems have no given alternative solutions.

Design: A Closer Look

When executives look critically at their digital transformation efforts underway or planned, it is very likely that they see the need to creatively solve for a problem defined by many of the characteristics outlined in this *Update*. It is, therefore, helpful to view the problem-solving process through the lens of design thinking rather than through the more traditional analytical thinking lens. In Part II, we will dive deeper into the design thinking tools and the process that goes along with them.

As always, we invite you to comment on the ideas and thoughts presented in this *Update*.

About the Authors

Gustav Toppenberg has more than 16 years' experience in startup, high-growth, and Fortune 100 companies. His diverse background includes building and leading transformational efforts for both small and global operations, and spans across business and IT strategy; business operations; IT risk management; project, program, and portfolio management; organizational change management; management consulting; and IT service management. Mr. Toppenberg serves as an adjunct lecturer on enterprise architecture at Stanford University and as an adjunct professor in the Department of Business, Technology, and Engineering at UC Berkeley. He holds a PhD in IT management from Copenhagen Business School and an MBA from Thunderbird School of Global Management with a focus in technology strategy and management. He can be reached at gustav@toppenberg.com.

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