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# Leveraging Design's Core Competencies

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**Delivering Value Through Design**

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# Leveraging Design's Core Competencies

by Chris Conley

*In a triptych of intriguing anecdotes, Chris Conley points out aspects of designing that add value to the spectrum of activities within the business enterprise—the ability to engage the context to and reframe problems, to work abstractly, to visualize, to use form to embody and communicate ideas, to discover critical relationships, and to generate meaningful alternatives.*



Chris Conley, Professor and Director, Product Design Graduate Program, Institute of Design, Chicago.

*Design expertise can play a definitive role as the designer moves from the design department to business management.*

There is a curious tendency, or perhaps it is a deeply held belief, that is evident when designers talk about their role in business. One might hear something like, “Business managers should use design more strategically, but they just don’t think that way.” Or perhaps, “Business is just trying to minimize costs. It’s not interested in innovation.” Over the years, as I have worked with “them” in so many different ways, I have started to wonder more and more: Who are “they?” And why are “they” so different from “us?”

Historically, design has made a big distinction between itself and business, driven primarily by the fact that design is employed as a service in most situations. But that distinction is blurring rapidly as design and its competencies are recognized as having a broad range of applications and value in building businesses.

The distinction may be blurring, but the barrier is still there, and until it is gone, we won’t realize the design

professional’s true potential. Whether you are a design consultant or an in-house designer, as long as you are working from the design department, you’ll be working as a designer, and not strategically.

One might ask if what I am suggesting is that designers simply give up on making a living as designers and move over to the business side (there’s that distinction of “us” and “them” again). That would be the case if the skills and expertise necessary for the new role were simply those of finance, operations, and marketing. But what has been so hard to fathom, or at least to state explicitly, is that design expertise can play a definitive role as the designer moves from the design department to business management.

## **The Core Expertise of Design**

Creativity has long been articulated as a core expertise of designers. Others include “coming up with new, valuable ideas,” “building brands,” and “helping

clients to innovate.” The trouble with these answers is that they are far too general; they clearly overlap with what is required of other disciplines; and they provide little insight into why a designer can add this kind of value. Still other core competencies are the kind that strategically inclined designers shy away from mentioning—that is, “making products and services understandable and good-looking.” While it is more specific, this response is often associated with design coming in late in the development process to help “clean up” a product or service. The move over the years to using words such as *strategy* and *innovation* is meant to give design expertise additional credibility, but unfortunately, those words are also used by other disciplines, and this diminishes their informative power considerably. The question remains: What do designers really do?

Over the past decade, through working with business leaders across industries and developing the current graduate product-design program at the Institute of Design, I have developed a firm understanding of the kinds of expertise that are at the core of design. These competencies, if you will, are meant to be much more specific than the creative dimensions mentioned earlier. Currently, there are seven of them and I am wondering, in line with psychologist George Miller’s recognition of one’s memory capacity, whether the ultimate number should be plus or minus two.

**They are:**

1. The ability to understand the context or circumstances of a design problem and frame them in an insightful way
2. The ability to work at a level of abstraction appropriate to the situation at hand
3. The ability to model and visualize solutions even with imperfect information
4. An approach to problem solving that involves the simultaneous creation and evaluation of multiple alternatives
5. The ability to add or maintain value as pieces are integrated into a whole

6. The ability to establish purposeful relationships among elements of a solution and between the solution and its context
7. The ability to use form to embody ideas and to communicate their value

These skills should seem familiar to most readers as the basis for strong design work. Of course, we have all seen them used to solve specific design problems. However, I have seen these skills employed by those with design training add value to a wide range of business initiatives before there was a particular product, service, or communication to design. Think about these skills applied to the beginning years of a startup company; to a major marketing research study; to the planning of a new product line; to an organization’s annual strategy-setting process. Designers can leverage these abilities and bring unique and powerful value to organizations.

The application of this expertise beyond what is normally considered a “design project” is accelerating design professionals’ relevance to business. Understanding the broad relevance and power of these skills, distinct from traditional business skills, makes it possible to break down the barrier between the designer and the business person. Where can we find examples? No doubt readers of this journal have experienced situations in which design skills were used to solve a problem more along the lines of “business” than “design.” The recognition that design expertise was at the heart of the value added can be subtle. Often, when something is done in a way that designers appreciate, it is because they recognize the presence of design competence and think, “Hey, they get it...that’s very smart.” As we begin to recognize and describe these actual competencies, design overcomes the “cult of personality”—which in itself is a result of design’s inability to describe its core expertise.

In order to illustrate design competencies, I’ll discuss three examples from professional work I have experienced over the past five years. As is true with most real case studies, I have had to leave out some details to preserve confidentiality. My focus is on how design competence can manifest itself and add value to what looks like standard business contexts.

### **Working in Technology Strategy**

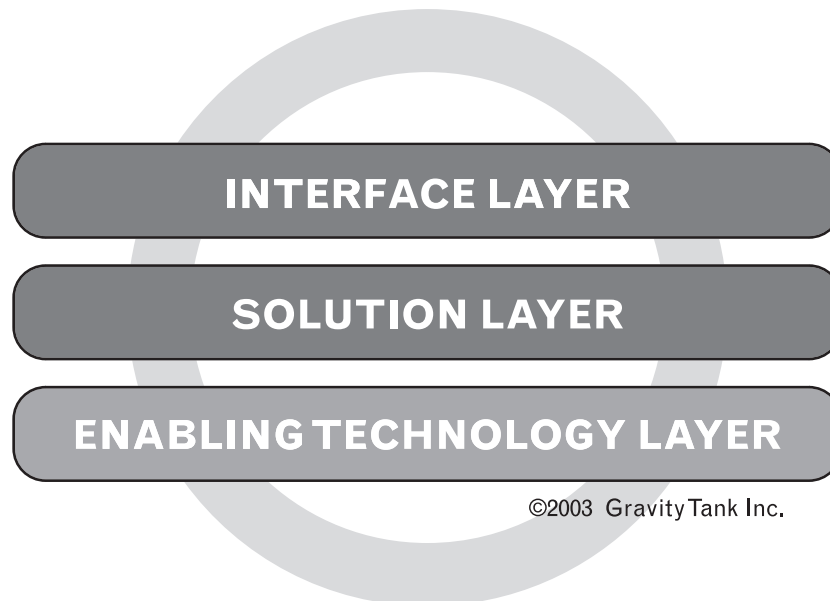
Brunswick New Technologies (BNT), a business unit of Brunswick Corp., focuses on the application of advanced technology across Brunswick's current businesses, which include boats and marine engines. BNT was assessing marine technologies with an eye to acquiring several companies. Not only would this growth be good for earnings, but the technologies of the acquired companies could also be used across other business units, leveraging their value. To help assess which companies to look at, BNT called on my firm, Gravity Tank.

Gravity Tank is a consulting firm. We don't have the financial and operational due diligence skills you might expect to be called for in an acquisition situation; our beginnings are found in user-centered research, product design, and product development. What we do have is a way of looking at the value of companies' offerings from the customer's point of view and how the actual embodiment of the products and services relate to customers. We also have a history with Brunswick Corp., having worked with various units of the company in the past. To help BNT, Gravity Tank agreed to conduct user-centered

interviews at key industry events to understand what boat owners thought of the technologies available—which ones were indispensable and which had brand value. This would help BNT select the companies that provide the most leverage and value.

What Gravity Tank found was that boaters didn't care much about technology—they simply wanted to maximize their boating time and the quality of the experience. Trained navigators and enthusiasts alike had actually begun to feel that the technology was getting in their way. Gravity Tank also found that the way in which Brunswick segmented its markets—by boat type—limited its ability to serve other needs of these customers. For instance, the assumption that an off-shore fishing boat only needed products and services for off-shore fishing was limiting; an off-shore fishing boat was as likely as a nice yacht to be used for an occasional cruise to the Bahamas.

The result of the program was a reframing of BNT's strategy, which had emphasized technology acquisition. Because the research had shown a relative disinterest, if not a rising opposition, to technology, the challenge was to reframe how



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To help Brunswick Technologies reframe its strategy, which had emphasized technology acquisition, toward new ways of providing value to its boating customers, Gravity Tank created this diagram (simplified here). Gravity Tank suggested that BNT shift from a technology focus to a solution focus and, in doing so, give itself more flexibility to serve boaters across *behavioral* segments in meaningful ways—ways that would result in more quality boating time. The diagram consists of three layers: an enabling technology layer, a solution layer, and an interface layer. Each layer represents a different role for technology. The enabling technology layer describes base technologies, such as GPS systems, an industry-standard communication bus, and navigation algorithms. The solutions layer represents a service, such as a speedometer, that could be provided to a specific boating activity. The interface layer holds different input and output devices, such as LCD screens and membrane key-pads, through which a service can be delivered to a boater.

BNT would provide value to boaters. Gravity Tank suggested that BNT shift from a technology focus to a solution focus and, in doing so, give itself more flexibility to serve boaters across *behavioral* segments in meaningful ways—ways that would result in more quality boating time. To help do this, we created a diagram, illustrated in a simplified form on the previous page, which consists of three layers: an enabling technology

layer, a solution layer, and an interface layer. Each layer represents a different role for technology. The enabling technology layer holds base technologies such as GPS systems, an industry-standard communication bus, and navigation algorithms. The solutions layer represents a service, such as a speedometer, that could be provided to a specific boating activity. The

interface layer holds different input and output devices, such as LCD screens and membrane keypads, through which a service could be delivered to a boater.

What design competencies were essential to this strategy program? The willingness and ability to understand the context of boating and reframe the problem was essential. Earlier in my career, I might have panicked as it became clear that the work we were doing would not give us reliable information about the companies BNT should acquire. Recognizing that users, as a result of their experiences, would have a lot to say about the acquisition strategy, we had to ask the question, “If boaters don’t care about the technology, where does the value lie?” This allowed the team to work toward a more meaningful answer for BNT. Notice that the reframing was not based on an independent flash of genius, but was developed from evidence—

interviews with enough customers to see that something wasn’t right.

The second design competence, “the ability to abstract,” also played a key role. The diagram created to communicate the layers of enabling, solution, and interface technologies is just an abstraction. Current GPS systems, for example, integrate all three technologies in a convenient package—as do most current boating technology products on the market. To think about “separating the system into layers” is to abstract from reality in order to evaluate the value that would ensue from doing so.

Finally, the diagram Gravity Tank created shows how the use of form to embody meaning can have significant business impact. Of the six or so recommendations from our work with BNT, it was the diagram representing the new strategy that the company quickly adopted. BNT began using it actively to think about and visualize how the strategy could unfold. BNT put specific items in each of the layers and varied them within and across boating groups. It was therefore able to look at many alternatives, all organized by the diagram, to assess how the strategy could be implemented.

This program was not traditional design work, yet it derived much of its value from using the core competencies of design.

### **Helping Business Teams to Make Decisions**

Matt Mayfield works in one of the business groups at Motorola that is responsible for all Motorola mobile phones based on CDMA (code division multiple access), one of the primary transmission standards in the industry. He has a degree in industrial design from the Institute of Design, in Chicago, and has more than 10 years of experience at several product development and management consulting firms. Given his experience, his views and expertise are broad, but his value to the CDMA group at Motorola rests in his core design expertise. He is responsible for planning the annual CDMA product line, which includes more than 50 handsets sold around the world. He looks to understand and rationalize many dimensions of the marketing

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situation, from the variety of products that will be available in the market to the changing nature of consumer desire and behavior, technological trends, and the particular strategies of CDMA carriers who are this group's customers.

All these activities sound like the activities of a business person. That's good, because Matt Mayfield is a business person. However, the way he works to fulfill these traditional business responsibilities is fundamentally different from the way a traditional business person might approach them. Many business analyses are based on a fairly linear approach: Gather data, use a spreadsheet or stat's package to analyze it, and report the findings. The findings are usually static, often presented in far too much detail in PowerPoint. Unfortunately, this approach has come to define the way in which people work together. We sit in review meetings watching static PowerPoint presentations, most of which have had no attention from a designer—someone who could improve the communication quality of the presentation.

Recently, Mayfield has built several tools using the same software program his business colleagues use—the spreadsheet. But the ability to model and to use form to communicate, and most important, the understanding of the need to play with multiple alternatives helps Mayfield use the spreadsheet in a different way. Mayfield is using design competence to make the spreadsheet more effective and to work with his colleagues in a new way. One of Mayfield's spreadsheets helps him to make decisions about which products should be developed and become part of the global portfolio. When Mayfield “presented” the spreadsheet and his recommendations, the traditional behaviors began. One manager thought a particular evaluation was not right. Another thought the value proposition of a product was not really right. Mayfield halted the discussion and offered, “What would you like to see changed? This is a live model. I've built it so that we can evaluate some alternatives real-time, together, and talk about the implications.” The managers thought

for a moment. “Make that a seven instead of a four!” “Increase the technical challenge of Product 23.” “Add our two South American carriers to Product 17.” He did, and everyone watched the resulting diagrams update in real time. It was clear from the resulting visuals, which took all of 10 seconds to generate, that these changes had little effect on the priorities. But the managers were intrigued. Mayfield distributed the tool to everyone at the meeting and sent them off to “play” with it.

Is there really something new here? Doesn't everyone use the spreadsheet to make models and conduct what-ifs? I think it would be foolhardy to overlook the important dynamic and precedent Mayfield was able to establish. When was the last time you attended a business meeting at which you were able to “play” with a model someone had built expressly for this purpose? It doesn't happen very often. When was the last time you looked at a spreadsheet built by someone else and found it easy to grasp on first use? Which one of your business colleagues understands that having others play with his or her work is a critical way to foster understanding of incredibly complex choices and decisions? The best designers routinely do these kinds of things within design projects, but these skills are unique and valuable far beyond the realms of design.

### **Crossing the Definition Chasm**

Marketing loves to create “requirements documents” that give customers everything they need and more—at a price lower than last year's model. Engineering loves to create technical specifications that are so detailed they preclude any understanding of what value customers

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might get from the product. Gravity Tank calls this the “definition gap”: Engineering can’t commit to what marketing desires, and marketing can’t approve a technical spec that doesn’t illustrate the actual use of the product. As a result of this gap, organizations spin their wheels or pick off pieces of the project to try and make progress. Unfortunately, the piecemeal approach never really solves the definition gap; indeed, it often forces the direction of the solution as a result of assumptions built into one of the pieces. The best way to address the definition

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gap is to find common ground between marketing and engineering at the right level of abstraction. This forces marketing to be more specific about what can really go into the product, and it forces engineering to be less specific about how a product could be implemented technically. Gravity Tank has found that low- and medium-fidelity

modeling works well for facilitating discussions at the right level of abstraction. It was the key to our work with Zebra Technologies, which had been working on a new product platform but was having trouble finding the right direction in which to proceed.

Zebra Technologies is the nation’s leading manufacturer of bar-code label printers. In late 2002, Zebra set off to create a new product that could be built for significantly less money than any of its previous products. It had been struggling, as many manufacturers do, between the marketing requirements and the product specification. The marketers wanted to know from the engineering group what could be achieved at the challengingly low price point. The engineers wanted to know from the marketers what performance was necessary so that they could analyze the tradeoffs and focus on problem-solving.

The process was at a standstill—a deadlock that was broken through the application of a Gravity Tank product-definition workshop. Gravity Tank’s workshops use the core competencies of design to help business teams to create robust definitions of products that are worth developing. The key competencies include abstracting at the right level, framing the problem, modeling solutions, and considering multiple alternatives.

Prior to the workshop, Gravity Tank gave Zebra a preliminary agenda which, in addition to the expected brainstorming exercises, highlighted a prototyping session on the second afternoon. The client liaison shared the sentiments of the engineering team, which were that there was no way they would be prototyping on the second afternoon of working on the potential product spec. Even assuming the team got that far, they questioned whether Gravity Tank’s facility had all the machine tools, metal bending, and electronic test equipment that would be necessary. Gravity Tank explained that automatic machinery and test equipment would not be necessary and that paper board, urethane foam, and hot-melt glue guns would provide a productive medium for the team to explore new product architectures.

Gravity Tank suggested that Zebra reframe its problem as one of addressing product architecture, rather than by selecting features based on cost. Many companies try to reduce costs by eliminating features, not realizing that design can actually change the value equation. A different approach to the way in which the product is designed (that is, its architecture) can help to lower costs while maintaining the desired features. For Zebra to meet its cost objectives, a new configuration was required, and Gravity Tank knew this was where potential value lay.

The workshop proceeded skeptically, but with good humor. The cross-functional team engaged in a variety of design exercises. Members took apart existing products, spent time with users of the equipment, and brainstormed hundreds of ideas. And they prototyped with paper, foam, and hot-melt glue guns—something many of them hadn’t done since

entering engineering school. At the end of the second day, an exhausted, surprised, and exhilarated team reviewed nine models of new product architectures they had created. The engineering team recognized that they had let go of a level of detail at which they normally work and played at a higher level of abstraction. In contrast, the marketing team was amazed at how specific the group was able to be about the nature, performance, and value of the potential products. Zebra was able to meet the extreme cost constraints of the new product while delivering significant new value to the market. The final product that emerged more than a year later is strikingly similar to the model that was made six weeks after the workshop: a testament to the problem-solving powers of abstraction. The Zebra team worked for two days in a highly collaborative and tangible way and was able to set sail toward a new product architecture.

Was this a typical design project? Perhaps. However, Zebra does not consider Gravity Tank a design firm. It is just "that consulting firm that helped us innovate." Although Gravity Tank worked with Zebra intermittently in the months following the workshop to integrate the disparate engineering work into an overall model, its contribution did not include any design or development work. Gravity Tank's role was certainly based around design skills, but the Zebra project was hardly a design project per se.

What Gravity Tank really offered Zebra was a way to leverage its existing resources, which it thought were running out of steam, to successfully innovate. The missing ingredient was the application of design expertise.

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## Conclusion

Current beliefs about design talent tell us that creative people are mostly found within design firms and that companies should hire those firms to do their work for them. To leverage the knowledge and talent that sits latent in many

organizations, one doesn't necessarily need a design firm.

What one needs is a more objective understanding and command of the core competencies of design.

Design expertise has little to do with that black box called creativity. Design is a discipline with a set of competencies that can be understood in objective terms and applied broadly across business functions. Designers, long locked inside the design department,

have the potential not only to use design strategically, but also to use it to create, manage, and grow successful companies.

The core competencies of design facilitate specific and tangible ways of engaging with problems. These competencies bring new value to the way in which business teams work. To foster the broad application of design competence, designers will need to feel confident in leaving the designer label behind and accepting the label of "business manager, strategist, or vice president." Of course, this is no big leap for the best in any discipline; one will find engineers, accountants, and human resource professionals at the helms of organizations around the world. However, at that point they are simply called leaders. ■

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