

# Managing Ambiguities : The Impact of Digital Technologies on Design Relationships

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Managing Ambiguities: The  
Impact of Digital  
Technologies on Design  
Relationships

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# Managing Ambiguities:

## *The Impact of Digital Technologies on Design Relationships*

**I**T'S A NEW world out there. The partnerships designers must build, the way they interact with clients and other disciplines, the structures executives need to manage design, and the experiences designers create—all have been dramatically transformed by digital media. Adam Kallish provides an overview of these metamorphoses, highlighting the challenges and the opportunities to be found in an environment constantly being reshaped by innovative technology.

*By Adam R. Kallish*

Technology is refining relationships among professional disciplines and the companies they serve. At the same time, their stakeholders and users are taking an increasingly larger role in the evolution of personalized digital solutions. Coupled with these changes is the consolidation of media (radio, TV, newspaper, magazines, and the Internet) and distribution (distributors, marketers, IT/IS professionals, editors, producers). Design as a profession, skill, and process is profoundly affected by these changes. Design professionals are learning to cope with an interconnected world shaped by business consulting and technology integrators, who are defining marketplace brand equities.

The personal computer revolution of the 1980s and its rapid acceleration in the 1990s, along with the explosive growth of the Internet, created new groups of users. At the same time, rapid applications development (RAD), developed by Cambridge Technology Partners, stressed faster iterative development cycles. New visualization techniques created robust



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and innovative design solutions. Designers went from passive users of the technology that replaced more-traditional production processes to active participants in the redefinition and development of digital experiences.

The information age has quickly dovetailed into the post-information age, changing both the emphasis and the direction of user-based solutions to address an experience economy. Designers have had to learn new vocabularies and skills through their own transformation, as well as from interactions with a new value chain of professionals who are automating online experiences. Now the development landscape is about the understanding of database/information flow, heuristics, use cases, and the convergence of time-based media (formerly referred to as multimedia).

### **Who's Involved? Orchestrating the Cacophony**

Design has always been enriched by its interaction with other professions. It is a synthetic discipline that accommodates a

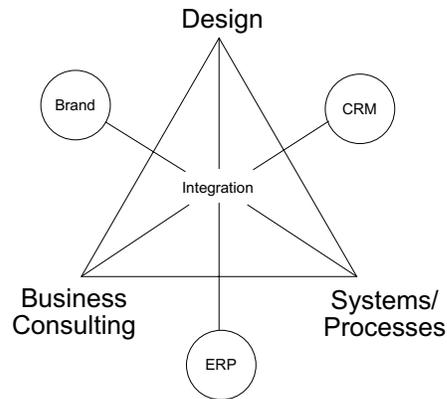
diversity of viewpoints from psychology, sociology, the sciences, mathematics, logic, business, film, and the fine arts. Tomas Maldonado, the Argentinean architect, wrote in 1965 about the challenges that continue to face design professionals today: “There is nothing less comfortable than being obliged to exercise an unlimited profession in a world of strictly limited professions. In other words, to exercise a profession whose beginning and end, whose own territory and that of the neighboring profession is unknown.... [One cannot ever rid oneself] of the unconfessed feeling of illegitimate appropriation.”<sup>1</sup>

Designers have facilitated and managed conflicting wants and needs of parties that either drove project specifications, provided the skills to complete projects, or benefited from the results. Paul Rand, Raymond Loewy, and Charles Eames all believed in the constraints of organizations or productions and worked with the marketing, engineering, and businesspeople of their day to create world-class solutions. Today’s designers endeavor to interact with these disciplines, as well as with new cadres of technologists and business consultants, which are more interdependent and must work with each other to identify shared values that bind them together.

In an interconnected world without precedent (ubiquitous communications infrastructures, faster development cycles, and new models of distribution), design communities face development challenges of a magnitude greater than that of even five years ago. Whether designers are developing online solutions, consumer products, or environments, a diverse group of professional disciplines has an equal voice in defining and creating integrated digital solutions. As a result, design has to validate its inclusion to reach a new level of compatibility with these disciplines.

The voracity of digital development and the role of the information technologies sector embodied by the Internet have created many professional dilemmas. Professional boundaries are falling as fast as the digital economy is growing. This has given rise to an increasingly nonlinear knowledge base, creating new models of conduct and interaction. These interactions have called into question who controls the specifications of development and have resulted in new professional hierarchies. In today’s world, we effortlessly think “third wave” (post-information age), but we are still mired in “second wave” (industrial age)

### A New Type of Integration



In order to provide professional services within the digital economy, a variety of capabilities are converging. This has caused an increasing need for and emphasis on program management and professionals who can help integrate the complexity of skills, deliverables, and timelines.

execution. The assembly-line mentality of “waterfall” solutions doesn’t work in today’s development of integrated solutions. This has exacerbated issues of professional accountability, still measured in “second wave” terms.

Designers are confronted with a new network of unexpected stakeholders. The context of projects in which they are involved has changed from that of marketing professionals, requiring well-established products, processes, and skills, to new business consulting and technology professionals, who are expected to possess a knowledge of business logic, business modeling, technology development, and new technologies that connect front- and back-end systems to be part of the designer’s lexicon. These issues have an impact on the design process by requiring designers to rethink their understanding of project specifications.

An example of this is the transition from business-to-consumer (B2C) Web sites, which tapped heavily into designer core competencies in branding, marketing, and design, to heavily transactional business-to-business (B2B) networks that can plug into B2C Web sites. Customer value chains, client supply chains, and business and operational systems are being redefined because relationships are being realigned. Designers have to work closely with new development collaborators in customer relationship management (CRM), enterprise

1. Tomas Maldonado, in Gyorgy Kepes (ed.), *Education of Vision* (New York: George Brazillier, 1965), p. 124.

resource planning (ERP), supply chain, data warehousing, and network architecture. Since much of the Internet is driven by the needs of core business activities—rather than by marketing imperatives—tone, discourse, and issues have become a higher-stakes process. No longer do marketing vice presidents control online solutions. These are now the realm of IT/IS directors and senior executives, with experience in technology, marketing, and organizational-change management.

The client, as well as the end user, has had a profound influence on development team

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behaviors. Clients are looking for collaborators who can enlighten them on "the way things work," and want to be engaged throughout the process that makes their product. Users now have a direct impact on the way development is implemented, and there is an increased emphasis on user

experience. The challenge is how to balance a complex set of stakeholders, with all their conflicting wants, needs, and levels of control, with the actual development problem or challenge to be met.

#### **How Is It Managed? A New Coalition of Professionals**

The industrial age brought new classes of managers, brokers, and middlemen to organize and place specialized skills in particular orders. In today's digital economy, decreased friction between transactional processes and customers, disintermediation, operational efficiencies, process transparency, and supply-chain reconfigurations have turned traditional management processes upside down. New infrastructures are needed to change mass-production models and centralized controls to increasingly decentralized and customized solutions.

It is not unusual in today's development environment to hear terms such as *methodology* and *process*. The assumption is that an overarching methodology or process can be built around the different stakeholder groups that influence, affect, or build a solution. Unfortunately, the difficulty in aligning all the variables to

accomplish this task is daunting and often unsatisfactory. In the current digital development process, linear activities have turned into simultaneous parallel processes. These new processes need to be housed in flexible frameworks that allow a degree of operational autonomy, where discipline-specific methods and processes can be used but link to general rules of engagement between disciplines.

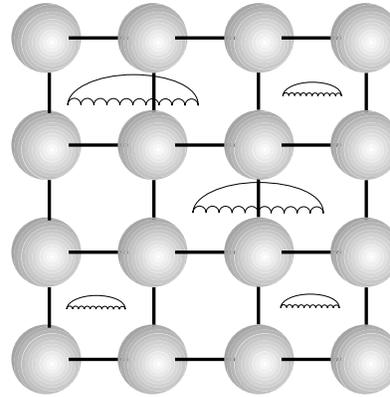
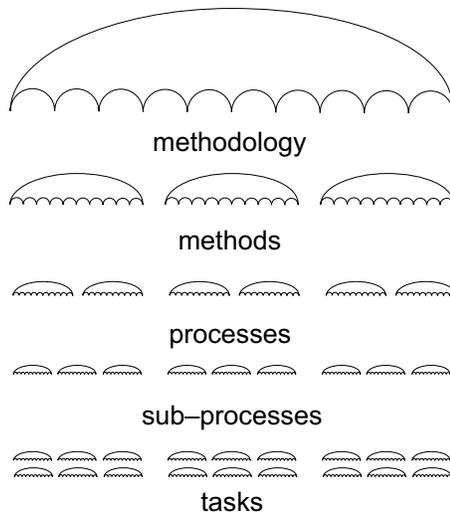
Part of the challenge facing multi-discipline collaborations is that *process* and *methodology* are never clearly defined and often become less than insightful guides for decision making (as is often the case with the term *strategy*). A methodology is a body of methods used to achieve a series of end results in a particular field—a body of methods arrived at by empirical research into that field. A method is the orderly arrangement of ideas, rules, and observations in order to attain or do something. A process is a series of actions, events, or changes that is embodied in a procedure. These are parsed into sub-processes and tasks that are competency-specific.

Every discipline has its own unique processes and tasks based upon the skills and tools afforded it. This is what defines a discipline and makes it unique. When a discipline controls end-to-end development of a solution, methods and processes are clear and understandable. When two or more disciplines have to coordinate activities in order to get a solution completed, there must be more interdependencies between skills and tasks. Clarity of purpose often breaks down and bottlenecks are caused by misunderstandings, unclear accountabilities, and professional agendas.

Design has unknowingly been caught in a professional quandary. By its very nature, it is a "macro" process—one that makes connections among seemingly unconnected ideas and processes. This has always been the value of designers and accounts for the eclectic nature of many designers' educational and professional experiences. Yet, in today's digital economy based upon technology delivery, designers have been asked, or are being forced by the market, to specialize in many niche areas: information architecture, user experience, and technology design, to name a few. These new competencies deepen design processes, but they also place stress on the "macro" skills that made designers valuable as problem solvers.

In today's digital development process,

### From Methodologies to Frameworks



Grand methodologies do not work any more. Too many competencies and skills are being brought to solutions for one large methodology to parse to specific sub-processes. Various methods and processes need to intermingle within flexible frameworks of basic shared values and interdependencies.

overarching methodologies are giving way to flexible frameworks that allow multiple processes to live with coordinated methods. They are built to adapt, not to last, because variables keep changing. A framework acts as a grid for development professions and allows for a wide diversity of skills. Key to a framework is the understanding of interdependencies that rely on input from several skills. If multidisciplinary teams understand the framework for interaction, then fluid development can occur and better-integrated solutions can be created. Design communities that specialize will also have to act under the same context, emphasizing what binds different design communities together, rather than highlighting what differentiates each group.

### Where Is It Done? Space Augments Place

When maximized digital technologies rely on networks of servers and the convergence of voice and data through streaming technologies, a new developmental fluidity is achieved. High-tech is creating a new level of high-touch. Project teams can be distributed in multi-location sites linked by high-speed networks and shared tools for rapid development and deployment. Intranets, in which files can be transferred, stored, and shared, and new knowledge management tools work as repositories of collected methods and processes. This can increase the performance of geographically distributed teams.

Meanwhile, because low unemployment is causing a squeeze on design resources for

many companies, there has been a trend to congregate design resources in a few locations that support secondary locations. Larger design teams, with many skills, competencies, and capabilities interact virtually with leaner, remote design teams that have a few core skills and competencies. This allows for better efficiencies, reduces unnecessary hiring, and allows for better use of skills.

Two types of technology are important in the management of distributed teams. One type enables a process for the interaction of these teams; the other type enables market solutions. In many instances, the same technologies are used for both, such as intranets, use groups, e-mail, voice mail, pagers, cell phones, and other hand-held devices. The most significant difference between the two is that in the first, distributed teams are active users; whereas in the second, they are active shapers of technology solutions.

Digital development is still a hybrid mixture of Web-based tools and traditional software-based tools. While new and emerging technologies have increased the transactional sophistication of rich information streams, they are not an end unto themselves. Experience has shown that digital collaboration is only as strong as the weakest collaborator. If teams do not share basic cultural values and are not comfortable using these new tools to their fullest potential, then operational effectiveness will break down. Unfortunately, large organizations are developing tools faster than their ability to show people how to effectively manage and use them in their everyday activities.

Teams do need to meet periodically. Real-time interaction is hard to replace, because it is spontaneous, non-media-specific, and multi-sensory. In design, where many forms of communication (words, models, and images) are used to encapsulate concepts, proximity is very important, because it allows for nuances to be captured. Design is a very intense interpersonal process that requires unfettered access to people. Many

designers are still not comfortable with basic Internet technologies, such as file transfer protocols (FTP), use of servers for file access and storage, and intranets. There has been a general dependence on e-mail for a level of communication for which e-mail was not structured. There have been advances in video-based communications, but depending on infrastructure, it can be a slow and cumbersome tool.

cell phones, pagers, Web-enabled game stations, and even wrist watches (Casio has announced a watch that can take photographs, download MP3 music, and interact with a computer) will change the way people receive and interact with information. Use of touchpads to navigate on green or silver plasma screens (the current visual structure) may or may not interest designers, but the larger question is: What role will designers play in the use of these hybrid technologies?

This shift has caused challenges within the design professions (especially graphic design), where decades of skill development are currently being reassessed by the marketplace. Charles Leinbach recognized that “physical products are relatively fixed in time and place, their utilities readily bought and sold. Product has a harder sound, implying something solid, dependable, reliable. Service implies a process, something elusive, not always satisfying, and never quite finished. The distinction between products and services is losing its meaning because the critical elements of both the specification for a product and the specification for service are the same.”<sup>2</sup>

The result of the overlap between products/services and technology as the enabler of interactions and transactions has created new opportunities and challenges for designers. The Internet is not just for consumers and marketers. With broadband and streaming technologies, the front end (the user interface) can be linked to the back end (the data interface) in very direct terms. Web sites with cutting-edge functionality require a new level of integration that goes beyond GUIs and begins to address a whole range of user experiences. Levels of personalization are creating unique individual applications that enhance performance and allow for sophisticated levels of tracking and monitoring of users, based on preferences and real-time usage. This is compelling designers to learn about transactional processes, technical infrastructures, and new ways to visualize information.

One of the larger questions facing designers, marketers, and business consultants is: Where does the online world meet the off-line world? Already, it is apparent that synergies exist in which the first drives the second—and vice versa. Traditional design solutions in print, environments, advertising, and direct

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### **What Is Being Created? A Constantly Reconfigured Experiential Complexity**

The rise of digital technology over the past two decades began with the Internet and the creation of proprietary intranets, continued with the invention of personal digital assistants, and is now seeing the distribution of information on a wide range of handheld devices and other digitally embedded consumer products. This has evolved the design process from viewing the “problem” as an object to be created, to a much wider landscape of semantic processes and interactions over time with that object.

Design has shifted its emphasis from graphic user interfaces (GUIs) that stressed graphical representation, to new skills that match cognitive requirements with benefits. This has moved design from digital functionality and has amplified the importance of designing sophisticated transactional experiences.

Technological advances in the delivery of information through wireless and broadband to personal devices will bring new challenges to designers. Cable boxes, digital assistants,

2. Charles Leinbach, “Purchasing the Design of Service,” *Design Management Journal*, Winter 1992.

marketing channels are being readjusted to work with online presences. This will require a new level of skill and professional knowledge for the various design communities that play a role in shaping a very large panorama of robust digital worlds.

### **Not Technology, But Our Shaping and Expectations of It**

The role of design in the development of this distributed digital delivery framework is still being formulated. Increasingly, the emphasis of online development is placed on the dynamic transaction of personalized information processes. Today's developmental environment is driven by the explosive growth of all things digital. The new currency is not revenue but more access to eyeballs—and hopefully more attention. It is this potential attention span of millions of people that will lead to a percentage of mindshare and in turn to a percentage of wallet share.

The post-information age's development and distribution of content through alliance partners, rather than by monolithic companies, has created whole new specifications and processes of products and services. Even the notion of what a company *is* has become increasingly intangible and commoditized as a result of digital delivery.

A number of industry reports have pointed out that professional services that develop digital technology solutions will not be able to keep up with demand. The insatiable

appetite for technology-enabled experiences, supersonic development, and constant change demanded by convergence and delivery sophistication will challenge the design professions. A new type of adaptability will need to be addressed by designers who will collaborate with professions they were never trained to interact with.

Harvey Brooks, reflecting on professional development and technology stated clearly the challenges that face the understanding of professional competency and collaboration. "The dilemma of the professional today lies in the fact that both the ends of the gap he is expected to bridge with his profession are changing so rapidly: the body of knowledge that he must use, and the expectations of the society that he must serve. Both of these changes have their origin in the same common factor: technological change. . . The problem cannot be usefully phrased in terms of too much technology. Rather it is whether we can generate technological change fast enough to meet the expectations and demands that technology itself has generated. . . This places on the professional a requirement for adaptability that is unprecedented."<sup>3</sup> ♦

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3. Harvey Brooks, as quoted in Donald A. Schön, *The Reflective Practitioner: How Professionals Think in Action* (New York: Basic Books, 1983), p. 15.

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