CHAPTER 1

The Stages of Idealized Design

"It's tough to make predictions, especially about the future."
—Yogi Berra

In the Introduction, we saw how the startling declaration by the head of Bell Labs that "the telephone system of the United States was destroyed last night" liberated the creative thinking of an enormous corporation and allowed it to reinvent itself. Of course, the declaration was not true. However, the idea that planning should begin with the assumption that nothing now exists clears the mind to think creatively about the best possible outcome rather than be distracted by finding reasons that "it can't be done."

In this chapter, we look at the stages in idealized design because success requires a systematic approach to the process. We begin by briefly explaining how it evolved from organizational planning in general, and conclude by describing how it was applied in the recent past to solve problems of the OnStar system at General Motors.

The chapter, and the two that follow, are intended to give you a comprehensive understanding of how idealized design works in practice in virtually any kind of organization or institution. Later chapters describe specific applications in less detail—focusing instead on the most important elements—with the assumption that you already understand the full process from these three chapters.

THE EVOLUTION OF IDEALIZED DESIGN

Before idealized design was developed, there were three approaches to organizational planning:

- **Reactivism**—Reactive planners find the solution to their organizational problems in solutions that have worked in the past. They are often nostalgic about the past state of their organizations and speak about "the good old days."
- **Inactivism**—Inactive, or conservative, planners are satisfied with the way things are and hope that their present problems will simply go away if they do nothing. Some observers have compared this mode of thinking to Voltaire's character, Professor Pangloss in *Candide,* who believed that "this is the best of all possible worlds."
- **Preactivism**—Preactive planners do not look to the past or present for the solution to their problems but believe that the future can be better than the present. For them, the future is an opportunity for improvement to be exploited.

The weakness in this approach is in predicting what the future will be. Any prediction of the future ensures a poor outcome. As Yogi Berra wisely observed, "It's tough to make predictions, especially about the future."

These approaches sometimes worked, but more often they did not. They were especially ill equipped to help organizations adapt to rapid changes in their environment, whether of changes in the market, changes in technology, changes in competitors, or other factors that affect their organizations. Visionary planners began to develop a fourth approach that was to result in the process of idealized design on which this book is based:

- **Interactivism**—Interactive planners reject the approaches of the other three planners. They plan backward from where they want to be to where they are now. They plan not for the future but for what they want their organizations to be at the present time. In so doing, however, interactive managers prepare their organizations for success in the unknowable future.

THE PROCESS OF IDEALIZED DESIGN

The process of interactive planning, called *idealized design,* has two parts:

- **Idealization**
  1. Formulating the mess
  2. Ends planning
- **Realization**
  3. Means planning
  4. Resource planning
  5. Design of implementation
  6. Design of controls

Here is how they work.

IDEALIZATION

1. Formulating the Mess

Every organization or institution is faced with a set of interacting threats and opportunities. These form what we call a *mess.* The aim of formulating the mess is to determine how the organization would eventually destroy itself if it were to continue doing what it is doing currently—that is, if it were to fail to adapt to a changing internal and external environment, even if it could predict the course of this change perfectly. This process identifies an organization's Achilles' heel—the seeds of its self-destruction—and provides a focus for the planning that follows by identifying what the organization or institution must avoid at all costs.

There are instances in which an organization or institution is faced with a crisis here and now—not sometime in the future. This present mess needs to be understood ("formulated") in the same way as a future mess before an idealized design can be undertaken to avert the possible destruction of the organization. In both cases, the process of formulating the mess is essentially the same.

Formulating a mess involves four steps:

1. **Prepare a systems analysis**—A detailed description of how the organization or institution currently operates. This is usually best revealed in a series of flow charts showing how material is acquired and processed though the organization. A similar chart for the flow of money and information is also helpful.
2. **Prepare an obstruction analysis**—Identify those characteristics and properties of the organization or institution that obstruct its progress or resist change (for example, conflicts and customs).
3. **Prepare reference projections**—Describe what the organization's future would be, assuming no changes in either its current plans, policies, programs, and practices, or changes of what it expects in its environment. This will show how and why the organization or institution would destroy itself unless it makes significant changes. This, of course, is not a forecast but a foresight of how the organization could destroy itself. This projection should reveal how the obstructions described in Step 2 prevent the organization from making adaptive changes to changing conditions.
4. **Prepare a presentation of the mess**—Combine the state of the organization and its reference projections into a scenario of the possible future of the organization, a future it would face if it were to make no changes in its current practices, policies, tactics, and strategies, and the environment changed only in expected ways.

2. Ends Planning

This stage of planning is at the heart of idealized design. It involves determining what planners would like the organization or institution to be now if it could be whatever they wanted. It then identifies the gaps between this idealized design and the organization as it is, thus revealing the gaps to be filled by the rest of the planning process. It is crucial to note here that the design must demonstrably prevent the self-destruction revealed in the formulation of the mess.

REALIZATION

3. Means Planning

This phase requires planners to determine what should be done to approximate the ideal as closely as possible to avoid the self-destruction projected in the formulation of the mess. Planners must invent and select courses of action, practices, projects, programs, and policies to be implemented.

4. Resource Planning

Implementing idealized design requires planners to identify and marshal the resources needed to accomplish the planned changes, including the following:

1. Determine how much of each type of resource—personnel; money; materials and services; facilities and equipment; and information, knowledge, and understanding and wisdom—are required. Also determine when and where to deploy the resources selected.
2. Determine how much of each type of resource will be available at the desired times and places and determine the difference between what will be available in any event and what will be required.

3. Decide what should be done about the shortages or excesses identified in Step 2.

5. Design of Implementation

Determine who is to do what, when, and where. Create a schedule and allocate resources to the tasks to be carried out.

6. Design of Controls

Determine (1) how to monitor these assignments and schedules, (2) how to adjust for failures to meet or exceed schedules, and (3) how to monitor planning decisions to determine whether they are producing expected results (and, if not, determine what is responsible for the errors and correct them).

These six phases of interactive planning do not need to be carried out in the same order presented here, but they are usually begun in this order. Because they are strongly interdependent, they usually take place simultaneously and interactively. Interactive planning is continuous; no phase is ever completed—that is, all parts of a plan are subject to subsequent revision. Plans are treated, at best, as still frames taken from a motion picture.

CONSTRAINTS AND REQUIREMENT

There are two constraints imposed on idealized designs and one important requirement. First, the design must be technologically feasible—no science fiction. This constraint does not preclude innovation, but it does restrict innovations to what we currently know we can develop even if we do not have it now. For example, it would be inappropriate in a design of a communication system to use mental telepathy to replace the telephone or e-mail. But clearly, we could increase the functionality of the mobile phone by having it unlock automobiles, turn on their lights, and turn on the heat or air conditioning in the house we are approaching.

The constraint of technological feasibility ensures the possibility of implementation of the design, but it says nothing about its likelihood. An idealized design, however feasible it might be technologically, may not be implementable for economic, social, or political reasons. For example, if all monetary transactions were electronic, a consumption-based tax system—in contrast to an income-based system—would be possible but very unlikely for political reasons.

The second constraint is that the design, if implemented, must be capable of surviving in the current environment. Therefore, it cannot violate the law and must conform to any relevant regulations and rules. It does not mean that the design must be capable of being implemented now. It does mean that if the design were implemented now, it would be able to survive in the current environment. For example, it would be possible to implement a system of all-electronic voting in elections, but it would not survive in today's world of computer hacking where voters cannot be sure that their votes are being counted. In the future, however, when voters can be confident of the integrity of the system, it will probably be implemented.

Finally, there is the important requirement that the process that is designed must be capable of being improved over time. If that which is designed is an organization or institution, it must be capable of learning and adapting to changing internal and external conditions. It should be designed to be ready, willing, and able to change itself or be changed. Therefore, the product of an idealized design is neither perfect, ideal, nor utopian, precisely because it can be improved. However, it is the best ideal-seeking system its designers can imagine now.

ANTICIPATING THE FUTURE

We have pointed out how difficult it is to predict the future. And idealized design stresses the need for planners to concern themselves with what they want now, not at some future time. However, this does not remove the need to take the future into account. It changes the way the account of it should be taken. In conventional planning, designers forecast the future in which the thing being designed is to exist. Unfortunately, as the rate of change in the environment continually increases, along with its complexity, accurate forecasting becomes more and more difficult and less and less likely. As we have observed, poor forecasts (or predictions) lead to poor outcomes. How then should the future be taken into account?

The future is taken into account in idealized design by the assumptions planners make about it. Contrary to what some forecasters claim, assumptions about the future differ qualitatively from forecasts. Forecasts are about probable futures; assumptions are about possible futures. We carry spare tires in our cars despite the fact that we do not forecast having a flat tire on our next trip. In fact, if anything, we forecast that we will not have a flat tire on the next trip. But we assume a flat tire is possible, however unlikely it may be.

Assumed futures can be taken care of in two different ways. First, there is contingency planning. When there are a relatively few and explicitly describable possible futures, planners can prepare plans for each possibility. This is called *contingency planning.* Then, when the truth about the future is known, the appropriate plan can be invoked. For example, an oil company can develop exploration plans based on the price of oil increasing, staying the same, or declining. When it is apparent how the price is moving, they can quickly move to the appropriate plan already developed.

The way of dealing with more contingencies than can be planned for separately is to design into the organization or institution enough flexibility and responsiveness so that it can change rapidly and effectively to meet whatever it encounters. Automobile manufacturers cannot accurately predict customer demand for all possible models, colors, and accessory packages. However, the best automakers have solved this problem by designing production lines that allow them to build different models and colors on the same production line as customer demand requires. Some manufacturers in a number of industries have created such flexible production facilities that they can customize each individual product based on an order just received. Boeing aircraft and Dell computers are examples. It is obvious that an additional benefit of such a system is that it allows for a rapid inventory turn and minimum idle capital.

EFFECTS OF IDEALIZED DESIGN

So far, we have described the way idealized design is put into practice. However, planners should be aware of an additional dimension to the process. It has a number of beneficial effects on those who engage in it and on their organizations, as follows:

- Promotes understanding of that which is designed
- Transforms the designers' concept of what is feasible
- Simplifies the planning process
- Enhances creativity
- Facilitates implementation

Let's look at each in turn.

PROMOTES UNDERSTANDING

There is no better way to gain an understanding of something than by designing it. Designing something as simple as a door handle on a car requires the designer to understand how the human hand grasps a handle and then turns (or pulls) so that the design produces a comfortable and functional handle.

Furthermore, in the design process, for example, one is forced to consider the assumptions on which the design is based. This consideration frequently reveals the irrationality of some of the features of the existing object and allows for their replacement. For example, in nearly all men's stores, clothing is arranged by type; a section for suits, another for overcoats, another for shirts, and so on. When a group of male planners engaged in an idealized redesign of a men's store, it became apparent to them that this arrangement was for the convenience of those who run the store, not its customers. They found that a far better arrangement for customers was to arrange the garments by size, not type of clothing, putting all the suits, coats, shirts, and so on in the same place so that each shopper—small, medium, or large—could find everything he might want in one place. Bookstores have always known this and arrange books by subject (because most browsers know what interests them, even if they do not know which books are available).

TRANSFORMS DESIGNERS' CONCEPT OF FEASIBILITY

The principal obstruction to what we want most is ourselves. The great American philosopher Pogo recognized this in his classic observation that "We have met the enemy and he is us." Our tendency, however, when we stand where we are and look toward what we want, is to see all kinds of obstructions imposed from without. When we change our point of view and look backward at where we are from where we want to be, in many cases the obstructions disappear.

Banking is a good example. Years ago, banks employed many tellers who handled transactions with customers. They received deposits and filled out deposit slips, cashed checks, and entered interest in savings passbooks. Bankers had to hire legions of tellers as their business grew. However, a few visionary bankers asked themselves what would be the ideal bank. They concluded that it would have few—perhaps no—tellers and would process all the same transactions. This vision led them to create automatic teller machines that allowed customers to do the work rather than the tellers. In turn, this led to online banking, where customers do not even have to go to the bank to manage their accounts. The obstruction bankers thought they faced—how to find and pay all those tellers—disappeared when they realized that banks could operate just as well with a decreasing number of tellers. Although some customers complained about this change, many more were pleased at not having to stand in line waiting to be helped by a human being.

SIMPLIFIES THE PLANNING PROCESS

Planning backward from where one wants to be reduces the number of alternatives that must be considered when making a choice of how to get there. It simplifies the planning process considerably.

An organizational example of simplification—requiring the details of planning backward and forward—is too long for our purposes here. So we offer instead an example drawn from a tennis tournament that nicely encapsulates how working backward greatly simplifies idealized design. If 64 players enter a tennis tournament, how many matches must be played to determine the winner? This is not hard to determine. There will be 32 matches in the first round, then 16, 8, 4, 2, and 1, successively. Added together, these equal 63 matches. However, if we start at the end and ask "How many losers would there have to be?" the answer is obviously 63, and no arithmetic is required. The advantage of working backward is even more apparent if we start with a number of players that is not a power of 2, say 57. The arithmetic now becomes complicated because some players must be exempted from the first round to make the number of players left after that round a power of 2. If we work backward, however, it is apparent that there must be 56 losers; hence this number of matches.

ENHANCES CREATIVITY

Human creativity is as old as humankind, but it was not very long ago that we began to understand what it is. We believe that it is a three-step process. First, it requires that we identify a self-imposed constraint, an assumption that we make consciously or unconsciously that limits the number of alternatives we consider. Second, we must deny or eliminate that assumption as too limiting. Third, we must then explore the consequences of this denial.

These steps are conspicuous in solving a puzzle (because a puzzle is a problem we cannot solve if we make an incorrect assumption). When the solution to a puzzle we have not been able to solve is revealed to us, we want to kick ourselves because we realize that we were the obstruction between the puzzle and its solution.

For example, consider the following puzzle that most of us were confronted with when we were youngsters (see Figure 1.1).

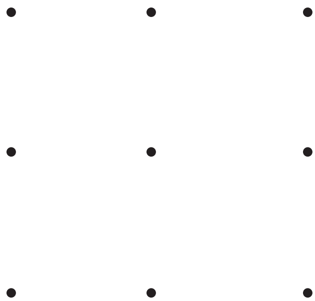

Figure 1.1

Then you are supposed to place a pen or pencil on one of the dots and, without lifting the pen or pencil from the paper, draw four straight lines that cover all nine dots. It cannot be done unless you deny an assumption of which you may not be conscious: that you cannot draw the lines outside the boundaries of the square formed by the nine dots. If you are not told that you can draw outside the boundaries, however, you must take it that you can. And when this assumption is put to rest, the solution is relatively easy (see Figure 1.2).

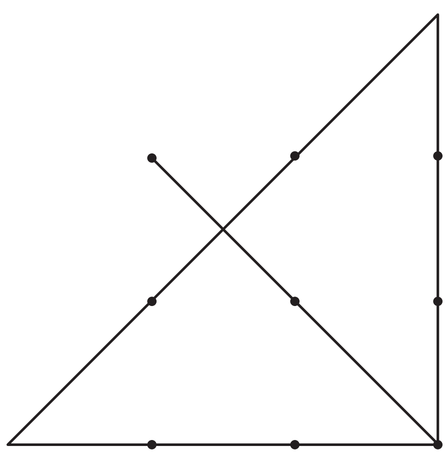

Figure 1.2

Furthermore, other possible solutions exist when all assumptions are ignored. If you fold the paper a certain way, the nine dots can be covered with one line using a felt-tip pen. An eight-year-old watching adults trying to solve this puzzle asked why they did not get a "great big fat pen that covered all the dots and just go blop." No constraints were imposed on the size of the pen used.

Creativity flows from this process.

FACILITATES IMPLEMENTATION

A major reason most plans are not fully implemented is that those people responsible for implementing it have no sense of ownership of it. This leads to resentment and subversion of its implementation. Idealized design, however, requires the participation of everyone who will be affected by it. Therefore, ownership of the resulting plan is widely spread among those who must implement it. This avoids resistance and subversion. Implementation of a design and plan based on it is usually carried out enthusiastically by those who had a hand in preparing it.

IDEALIZED DESIGN AT GENERAL MOTORS

In the Introduction, we saw how idealized design could be used to reinvent a major corporation, AT&T, and at the same time reinvent the industry in which it operates. However, it is likely that idealized design will be used more often in projects of smaller scope. At General Motors, in the late 1990s, the company faced a challenge with one of its new products, the OnStar safety and security system. Their actions illustrate the steps by which idealized design was applied locally in a huge organization through the determination of a few partisans of the method.

The example also illustrates that an organization going through a crisis of market-share loss and declining profits—that continues to this day—can nevertheless successfully remake parts of its business. The example was told to the authors by Nick Pudar, Director of the GM Strategic Initiatives group, who worked with Ackoff on problems at GM.

General Motors had introduced the OnStar system in its Cadillac line as a differentiating feature in 1996. Consumers could purchase the OnStar feature and have it installed on their vehicle at the time of purchase of the vehicle. OnStar was based on an electronic device installed in the cars that provided two-way cellular communication with a live advisor in a call center. The system delivered a range of services to owners: automatic two-way communication with the call center if the car is in an accident and the airbag deploys (at the same time, the car's GPS location is sent to the call center advisor who can dispatch emergency services to the car's location if necessary); if the owner is locked out of the car, the advisor can send a signal that unlocks it; if the owner cannot find the car in a crowded parking lot, the advisor can send a signal to the car to flash its lights and honk its horn; if the "check engine" light comes on, the owner can request the advisor to do a remote diagnostic check to determine how severe the problem is and what to do about it. These and other services that OnStar provided are, of course, of considerable value to owners.

But the OnStar system was expensive to install and maintain. Cadillac buyers could afford the car at a price that included OnStar. On the other less-expensive GM lines, however, the additional cost presented more of a problem. The system could not be included in the base price of the car without increasing the price beyond what planners believed buyers would pay. Therefore, installation had to be made by dealers who were able to sell the system as an "accessory" to those buyers willing to pay for it. It cost the customer almost $1,000, not including the cost of installation and dealer profit. In addition, buyers had to pay a monthly charge for cellular service and a subscriber fee for services provided by OnStar advisors. The result was that GM had more than 30,000 OnStar subscribers by 1998, far too few to consider the system a success.

It became clear to the people directly involved with OnStar that they needed to rethink their strategy if the system were ever to become widely adopted by owners and profitable. The OnStar leadership commissioned a small team to study the problem, and the team decided to use an idealized design approach. We look here at what they did at each stage in the process without going into all the details of the steps described earlier in this chapter. The object is to give an overview of a real-world application of a typical idealized design.

IDEALIZATION

1. Formulate the Mess

GM indeed had a mess on its hands if it wanted to expand the number of buyers who would pay for OnStar. The high cost of device installation and the high monthly fee of the combined OnStar and cellular service resulted in too few new customers for it to be profitable for GM.

The team formulated the mess. First, the device either added to the price of the vehicle and had an impact on sales, or, if it were offered below cost, it degraded the profitability of the program. Second, the team was concerned that dealer installation might potentially result in added quality and warranty costs because the vehicles had to be partially torn up to install the OnStar device. Third, the installation of OnStar bypassed GM's policy of lengthy testing to validate each new product, raising concerns about the quality of the system.

The team was concerned about the complexity of the business. Maintaining the availability of the right installation kits for each dealer was a daunting task. Each different GM vehicle required a different installation. Dealer training for the installation process was not a simple task either.

Dealers had their own concerns. Although they made a reasonable profit on each OnStar device they sold and installed, each dealer did not sell enough units to make it seem worth the time it took to install. Dealers also believed that selling OnStar to their customers created possible confusion and could interfere with selling the vehicle itself.

When the teams modeled the current business, they found that the same issues would be present regardless of how aggressively the business was pursued in the future. The economics and logistics of dealer installation could not be made into an attractive and lasting aspect of the business. Thus, the team realized that dealer installation was not sustainable. However, factory installation had its own problems. If the OnStar device was installed on a vehicle in the factory at no cost to the buyer, there was no guarantee that a customer would become a subscriber (and thus allow the subscription revenue to offset the hardware cost). Given the hardware costs at the time, it did not appear that factory installation would ever be a viable solution for the business.

2. Ends Planning

The team then came to the heart of idealized design, asking this question: "If you could have anything you wanted today, what would it be?" For the OnStar idealized design, the team's answer was simple: GM would have OnStar factory installed across the entire vehicle lineup for the 2000 model year. (The idealized design project was being conducted in the fall of 1998, and the 2000 model year vehicles would start being built by the next summer [1999].)

This design met the challenges identified in the original formulation of the mess. If OnStar were a standard feature on all vehicles, it would confer a distinctive and desirable awareness of GM to prospective buyers; factory installation would eliminate the need for dealers to "sell" the system and, instead, it would become a sales feature for dealers to use in closing the sale of a vehicle; factory installation would ensure quality control on installation and a lower installation cost; the final result would be a more aesthetically pleasing hardware package.

When the team presented this timing as the "ideal," they got uniform rejection from across the entire enterprise. The ideal was deemed to be ridiculously unrealistic, and completely disconnected from the reality of the extensive and lengthy vehicle development processes. At that time, typical product programs took up to five years to complete. The validation and testing process would never allow any vehicle features to be added late in the process. If new hardware such as OnStar was to be installed in the factory, it had to be added to a new product program and start from the beginning. The implication was that the earliest that OnStar could be factory installed in GM was for the 2005 model year, and on only one vehicle line to begin with. It would have to prove its value to the corporation, and then other vehicle platforms would decide whether it was warranted to add OnStar to their programs.

However, the team persisted and continued to describe and communicate the virtues of having a factory-installed solution across the entire line of GM vehicles. They presented a business simulation and financial model that showed a steady decline in costs through learning effects as well as economies of scale and scope.

Eventually, upper management became convinced of the value of factory installation but was unconvinced that it could be accomplished by the 2000 model year. The team was faced with finding ways to fill the gaps between the ideal and present reality.

REALIZATION

3. Means Planning

While the team was promoting the value of factory installation to upper management, it also turned its attention to finding the means of accelerating the expansion of factory installation of OnStar across all vehicle lines as soon as possible—shooting for a launch in the 2000 model year. The stages of idealized design do not always occur in lock-step sequence but often overlap as they did at GM.

The team identified five components of a successful business model to develop, based on Adrian Slywotzky's elements of a business model. First was this: Who were the *customers to be served*? These were to be every owner of a new GM vehicle. Spirited debate broke out over the question of including cellular phone service along with OnStar services. While some argued that cellular service was not in GM's product portfolio, others made the point that including it would generate revenue as GM became a "reseller" of that service. The team decided in favor of the opportunity to participate in the revenue from cellular service.

The second component of the business model to develop was the *value proposition* (what will be delivered to the customer that has value for that customer). OnStar would deliver a broad array of safety, security, and information services in a way that would be appropriate for different situations confronting vehicle owners.

The third component was *service delivery*; the team decided that the service would be "high-touch" and delivered directly by a live human advisor when required or requested by owners. However, an automated "virtual advisor" would also be available if the customer preferred that kind of service. Finally, the service would also be delivered and enhanced through the Internet at a personalized website for the customer. Setting up the system would take place outside the vehicle, and then voice recognition technology was used to navigate through the information when the customer was in the vehicle.

The fourth component turned out to be as contentious as any issue facing the team. This component was the extent of *strategic control* over the service. Should the design of the service be kept proprietary and exclusive to GM as a way of differentiating its vehicles to customers? Or should it be an open architecture across the entire automobile industry? The team concluded that the idealized design would have both open and closed aspects. The exchange of information to and from the vehicle would be an open architecture design with standard protocols. This would stimulate third-party developers to create service applications that could be used with the OnStar hardware. The team believed that the creativity and energy of outside companies would create "killer apps," or software applications that eventually dominate their markets, more quickly than if GM tried to develop everything in-house. However, the data and information that would be exchanged would have "controlled access" that was handled with encryption and authentication keys. The data would get "red, yellow, and green" designations. Things that were green would have encryption and authentication keys that were license free, and would have full read/write access to and from the vehicle. Such areas as radio control, seat memory control, heating, and ventilation would be candidates for the green designation. Things that were red would not have any access at all. Such areas as traction control, brakes, airbags, steering, and other safety critical systems would not be allowed to have read or write access by any non-GM application. However, there were other areas of the vehicle that had some economic value such as maintenance diagnostic data that would be designated as yellow, and would be made available through license arrangements.

All the data would flow through a single control point called the vehicle gateway. The team viewed this gateway as an important common interface for OnStar to connect to a wide array of vehicles. If the idealized design included other manufacturers' vehicles, it would be important that all vehicles had a similar gateway that functioned in the same manner for easy and standard communication for OnStar. The team recommended that an industry consortium be formed to drive toward a common approach to handling vehicle data exchange and set the appropriate standards. GM initiated the early discussions with other car manufacturers, and the Automotive Multimedia Interface Consortium (AMIC) was formed to address these very issues.

Finally, the team dealt with the fifth component of the idealized design business model, *value capture.* OnStar should make money from a variety of transaction types, including—but not be limited to—subscriptions, pay-per-use, supplier commissions, access fees, slotting fees, revenue sharing, reselling, and so forth.

4. Resource Planning

The team parceled out resource planning to a number of groups to determine how much of the types of resources—personnel, money, facilities and equipment, information and knowledge—would be required to meet the 2000 model year deadline. Groups determined when each resource would be needed and where it would be deployed. The groups also planned how to ensure that the resources would be available when needed. Specific focus was placed on design of low-cost and simplified hardware; development of the process of installation at the factory; design and negotiation of access to a system of non-geographic-based wireless phone numbers; redesign of the role of the dealer in the marketing process; change of the marketing approach from a *customer acquisition* focus (which would become automatic if OnStar was installed on all vehicles at the factory) to a *customer retention* focus (signing up owners for the OnStar service after their trial period was over); increasing the call center personnel to handle the huge anticipated volume growth; major redesign of the associated information technology applications to handle the business growth; renegotiation of many support contracts with outside vendors to take advantage of economies of scale; and development of a sales force to market OnStar to other vehicle manufacturers. Many additional details had to be identified and worked through to scale up the business in preparation for the increased volume of factory installation.

5. Design of Implementation

The team laid out a timeline specifying who was responsible for the completion of each phase of the implementation by the scheduled deadlines. It also specified the resources that needed to be allocated to each phase in order that the project move forward as planned. Each of the activities previously described had individual timelines that flowed into an overall timeline. The organization was small enough and concentrated enough to allow for regular meetings among the leaders in each area to track progress and to react quickly to deviations from the plan.

6. Design of Controls

Finally, the team designed control mechanisms to monitor the progress of the project. To succeed, each part of the system would have to be brought on line in time to make the 2000 model year deadline. If a scheduled completion of some part of the project did not occur on time, the final deadline would be in jeopardy. Having timely awareness of a slipped schedule would give project managers a chance for corrective action that might meet the ultimate deadline, or minimize the delay it might cause.

THE OUTCOME

This example of idealized design took place in the real world, and in the real world perfection is elusive. The idealized design called for OnStar to be factory installed on all GM models in the 2000 model year. The team did not succeed in full implementation, but it achieved enough success to prove that the concept of the project was feasible and that it would result in a significant increase in the sales of and revenue from OnStar.

Through hard work and determination, they were able to find solutions to launch OnStar as a factory-installed feature in half of GM's portfolio of 54 vehicles for the 2000 model year. Not every vehicle carried OnStar across the board. Some vehicles included OnStar as part of an "option package." Others offered it as an optional feature. A few did include it as a standard feature on each vehicle. Another important decision made was that the marketing divisions of GM would include one year's worth of OnStar service at the time of vehicle sale at no cost to the buyer as part of their differentiation strategy. The team expected that buyers who experienced the value of OnStar would sign up to continue the service. These decisions quickly launched OnStar's growth from 30,000 subscribers in 1998 to more than 3,000,000 subscribers in 2005. Table 1.1 shows the approximate monthly average of service requests by owners.

Table 1.1 Subscriber Interactions in 2005

Approximate Monthly Average

900 automatic airbag notifications per month	20,000 roadside-assistance requests per month
400 stolen vehicle location requests per month	35,000 remote door unlocks per month
13,000 emergency button pushes per month	293,000 route-support calls per month
23,000 GM Goodwrench remote diagnostics	7 million OPC calls per month (OnStar Personal Calling)
4,500 Good Samaritan calls	19 million OPC minutes per month
90 advanced automatic crash notifications	32,000 Virtual Advisor Traffic requests
62,000 Virtual Advisor Weather requests	

In addition, GM announced in 2005 that it would aggressively expand its OnStar delivery to be standard across all retail vehicles by 2007. By that time, GM plans to provide OnStar standard on more than four million new vehicles each year in the United States and Canada. In keeping with its important strategic decision to license OnStar to other automakers, in 2005 OnStar provided service to Lexus, Audi, Acura, VW, Honda, Subaru, and Isuzu. Some of these automakers installed the hardware in their factories before shipping the vehicles to the United States, and others installed it at the port of entry. None required their dealers to do the installation. Neither of the other two Big Three U.S. automakers licensed OnStar.

Many people worked extremely hard to make OnStar the success that it is, but at the beginning, OnStar's future was uncertain. The idealized design framework helped people focus on what the OnStar business "should be now" instead of focusing on the then-existing problems and constraints. It is safe to say that without idealized design, the partial launch in the 2000 model year would have been impossible and the full implementation in the 2007 model year would not be GM's mainstream plan.

SUMMARY

We have described the essential stages for a successful idealized design. We have also described the process in action in the real world. In the real world, some of the gaps between idealized design and today's reality can be filled, and some cannot. Without idealized design, however, most projects that seem impossible today will not be realized tomorrow.

The next chapter explains how, by organizing the design process, to increase the potential for success at each stage of idealized design.