Brainstorming Is Not Enough

Brainstorming can be pure pleasure. With a good creative team, new ideas can keep rolling in like waves to a shore, one right after the other, offering endless variations on a theme. Being in the creative flow and having so many ideas wash over you can be invigorating. But like waves dissipating on the beach, the energy of simple ideas—even excellent ideas—usually gets lost after the brainstorm is over. There's a problem in the process of invention: Designers lack an efficient method for capturing and communicating the power of their best ideas.

In this chapter, I hope to solve that problem by showing you how to create what I call a "conceptual design." The process I describe can help you develop your idea to the point where you can actually envision it becoming a reality.

The process of creating a conceptual design is simple and quick. In less than three hours, you can develop a first draft, ready for sharing with your target users, colleagues or boss.

Conceptual Designs Let You Share and Improve Your Idea

Sharing ideas early and often is one key to success for designers of end-user products and services. Sharing with target users gives you feedback to help you improve your concept. Sharing with colleagues helps to ensure that everyone on the team has a similar vision. Sharing with your boss enables you to enlist her support and feedback early-and if she hates the concept, to turn your attention to something with more potential for your organization.

I've been developing the format for conceptual designs since 1996, when I worked at Interval Research. Since then I've taken the method with me to my professional work, inventing new products and services at Sun Microsystems, Casio Research, and for a variety of clients. I've also taught the method to about 150 students over the past seven years at Stanford University. Over this time I've improved the format, distilling the formula down to the essential parts in the right sequence, and have created a series of slides as a template for conceptual design.

Like most conceptual designs, these slides share lots of information in a logical sequence. What you don't see at first is how much the framework for conceptual designs help to identify what designers needed to do to make their concept understandable. By the end of this chapter, I hope you will recognize the role that conceptual designs can play in your own work.

Elements of a Conceptual Design

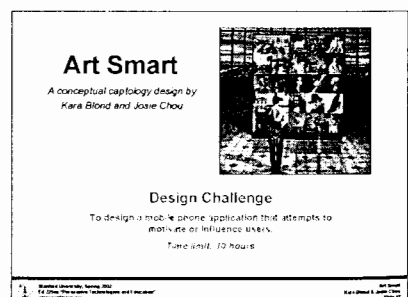The standard conceptual design has twelve parts:

1. title page
2. overview
3. user description
4. storyboard of user experience
5. prototype
6. features/functionality
7. justifications for design (theoretical and practical)
8. results of user testing
9. shortcomings of design
10. expansion—what else is possible
11. next steps in design process
12. summary

As I've evolved the formula for conceptual designs over the years, I've modified elements along the way. As the formula stands now, these twelve elements serve most purposes, though at times teams may need to add some elements to describe market landscape or revenue models.

Over the years, I've also found that it's simplest to create conceptual designs in PowerPoint or other types of presentation software. Word processing programs aren't as effective because they don't have powerful visual capabilities. I've created a template (available at   ) to help you develop your conceptual designs. With this template in hand, you won't have to think about the order of ideas or formatting issues. Instead, you can stay focused on the particulars of your user group, concept and audience.

The easiest way to demonstrate how this template works is to show an example. In the pages that follow, you'll find my template next to a student team's final concept, each slide side-by-side. I'll provide explanations along the way, but you should also note how the students worked from the template to create their deliverable. This two-person team spent 10 hours on this project, start to finish.

1. THE TITLE PAGE

In the conceptual design formula, the title page launches the concept quickly and clearly. The concept name and creators are listed prominently, and the graphic generates visual interest. Both of these elements set expectations about what's to come.

Because the template in this example is geared toward design challenges, the title page includes a summary of the design brief and the project time limit. In a corporate setting, designers should instead say what they are trying to accomplish with their concept (for example, "Project Goal: To win back our market share in the digital camera space") and list how much time they've invested in the project so far. Explicitly stating the goal and time investment helps the design team and executives decide whether it's worthwhile to continue the project.

2. THE OVERVIEW

The overview restates the project name and expands on the purpose. It's worth repeating these elements, since the concept may be new to your audience. The most important element on this slide is the visual of the industrial design, whether it's a physical device or an interface. Getting this visual into people's heads early helps them start thinking about your concept in concrete ways.

Note that at the bottom of each slide there is a footer that contains information about the project, date, designers, and so on. If someone arrives at the presentation late, these elements help orient the latecomer to the concept. Also, in many corporate settings presenters hand out paper slides for participants to take away. These pages can easily become separated down the road, so it's good practice to put all this information on each slide.
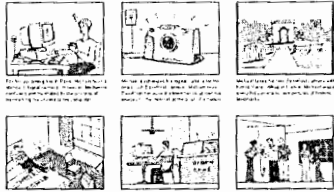
3. THE USER DESCRIPTION

The user description should not be overlooked, although it sometimes is, when designers assume that everyone knows the target user. In fact, those who are new to your concept may not know the target user unless you define the user for them.

At this point in your design process you may not have much information about your target user, but you can put something down on this slide, ideally including photos of people to help your listener envision the target user. If the project expands, this area in the conceptual design will expand dramatically as you gain more understanding about your target audience.

4. THE STORYBOARD OF USER EXPERIENCE

Note: The team created four more pages of prototype material, which is not shown here.

The most effective way to share your concept is to tell a story about how a particular user would experience what you propose. Of all the slides in a conceptual design, the storyboard slide has the potential to communicate best—and to win people over. If you have time to share only one slide from your conceptual design, this is the one to share.

Of course, executives will want to see hard numbers to make a business decision, but I've found they can't easily say no to a good story. In the early stages of design, you don't have time to round up all the market data or technical

requirements, but you should take the time to invent a story and create some visuals. When you show a storyboard to executives and decision-makers, they will understand your idea quickly. And if your story is compelling, you buy yourself more time to round up the data that management will need down the road.

Storyboards are also a great way to share a concept with target users. Showing a storyboard slide starts a productive discussion in focus groups and interviews. A storyboard can give you the same type of high-level feedback as a rapid prototype.

Storyboarding is also an effective strategy for cross-cultural innovation. During the three years I worked with Japanese executives who had marginal English abilities, I found that sharing storyboards was key to making my concepts clear. Carefully scripted pictures can overcome language barriers.
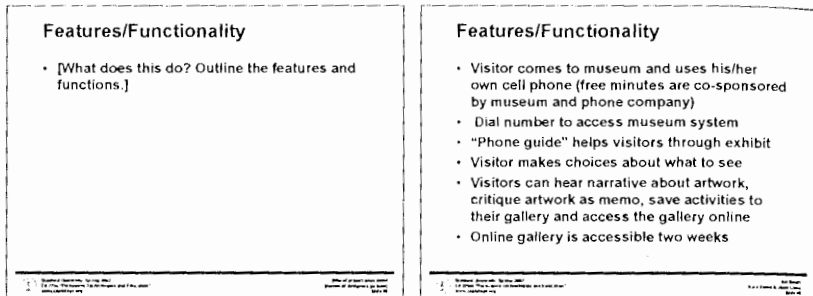
5. THE PROTOTYPE

I define "prototype" broadly. A prototype can be a visual that suggests functionality, as the example above illustrates. It can be photographs of a paper prototype. Or it can be a rapid digital prototype created in just a few minutes. In these conceptual designs, the level of prototype depends on how much time you have given the project. Even if you have just three hours to produce the conceptual design, you can at least sketch a prototype. Often a sketch at this early stage is superior to something that appears to be high resolution, since a sketch will evoke comments about the overall concept, while a high-resolutions version can distract users or executives who might focus on pixel-level details.

When sharing a new concept, some people jump right into presenting the prototype before they establish the project purpose, the target user and the context of use (shown in the storyboard). Rushing to show the prototype is a mistake. Without knowing the other elements, your audience won't be able to think accurately about your concept or how to evaluate your prototype. They'll make guesses about the purpose, the user and the context of use, which you don't want them to do.

In my year-long stint as a VC just before the dot-com crash, I listened to dozens of presentations where entrepreneurs proudly showed off their prototypes while my team and I sat in the dark, scratching our heads. Sometimes we had little idea what the entrepreneurs were showing us. It was frustrating. I eventually learned to stop the entrepreneurs so they didn't waste everyone's time; I would ask them to back up and tell us a story about someone using their innovation, whether it was another company using their video compression technology or an end-user wearing a new type of fitness device.

6. FEATURES/FUNCTIONALITY

Features/Functionality	Features/Functionality
• [What does this do? Outline the features and functions.]	• Visitor comes to museum and uses his/her own cell phone (free minutes are co-sponsored by museum and phone company) • Dial number to access museum system • "Phone guide" helps visitors through exhibit • Visitor makes choices about what to see • Visitors can hear narrative about artwork, critique artwork as memo, save activities to their gallery and access the gallery online • Online gallery is accessible two weeks

This features/functionality slide gives you an opportunity to outline details of the concept, including those that the storyboard and prototype could not convey. At this point your audience understands the big picture and should be ready to deal with more details. But don't include everything on this slide. One of the hardest things about creating a conceptual design knows what to include in your concept and what to exclude. The temptation is to include lots of features and functionality. Don't do it!

To help myself and others resist the temptation to overload the features/functionality slide, I ended up adding a new slide toward the end of the template (#10—What Else is Possible). This is where you can put ideas you really like but which don't fit into the streamlined vision. (More on slide #10 later.)

In an industry setting, after the sections on the prototype and the features/functionality, you'll eventually want to include an overview of technical requirements or a systems diagram. When I work on industry projects, I farm this part out to engineers.

7. JUSTIFICATIONS FOR DESIGN

Theoretical Justifications

- [Outline why you made the choices you did]

Theoretical Justifications

Persuasive Strategies
- Personalization – with your personal web gallery & customized tour
- Pregiving – of the free cell minutes; promise of the website
- Self-feeling Positive – offers a chance to be creative, gives encouraging feedback
- Improve self-efficacy by:
  - Social Proof (People listen to me' I'm part of an art community)
  - Fun (This part is something I'm already comfortable with) puts them in a receptive mood
- Intrinsic motivation through curiosity, choice and recognition

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The justification section allows you to explain the rationale behind your design decisions. In the example above, the designers justified their concept by drawing on academic theories of persuasion and compliance, which was fitting for a project in my persuasive technology class.

But in an industry setting you've got to be more practical, since people who control the purse strings are rarely impressed by academic theories. While theoretical underpinnings might strengthen your case in the corporate world, executives want to see practical types of justification, such as the value proposition; market size, timing, and positioning; and the fit with company goals, risk profile and competencies. If you understand a company's market and goals, these bullet points are fairly easy to outline in a few minutes. In my experience, the real benefit of this slide is to start a discussion—both inside the innovation team and with decision-makers—about whether or not it makes sense to pursue a concept further.

8. USER TESTING

Results of User Testing

- [User research results here, if any. It's great to include photos.]

Results of User Testing

- Avi, 27
  - His phone has a small display – could be a problem
  - "I'd definitely be more likely to recommend it [the museum]."
  - "I'm not a big fan of museums, but I think I'd have fun with this."
  - Worries that cell number would be given to telemarketers
  - Wouldn't use art manipulation tool/better for kids
- Ken, 32
  - Would use the product
  - Technology is flexible and adaptive to his schedule
  - Persuades him to upgrade his cellular phone
  - Long using hours might run out of the battery power
  - Cellular reception quality might be a issue for indoor usage
  - Worries about cell phone radiation exposure

I'm always pleased when designers manage to complete some user studies as part of a 10-hour project. It's true that having just a handful of studies may not reveal much (though at times it does), but I think it's good discipline to perform some.

I include this slide in the standard template to make a point: user studies are important. In reality, this slide often ends up empty, and with good reason. It takes time to prepare materials and conduct user studies. If your time is limited, you won't be able to fill this slide with substantive results or user feedback. But don't leave this slide blank (or worse, just delete it). In my own work, when I don't have results to share, I use this slide to outline a rough plan for conducting future studies with users. This takes only a few minutes and shows you're serious about moving ahead with the project.

9. SHORTCOMINGS

While all the other elements in the conceptual design formula point out the positives, this section on shortcomings points out the problems, both in the concept and the work done so far. Beginning designers find this step counterintuitive. But in an industry setting, it's vital to make weaknesses clear. And it doesn't hurt. Really.

Paradoxically, the positive elements in your conceptual design become more positive when you point out key shortcomings; when you include shortcomings, the concept you're proposing will seem more realistic and less like hype. You also build your own credibility by showing an awareness of why your concept may not work.

If you do not point out the shortcomings of your design to executives, they will do it for you. In fact, this is likely to be an executive's first response: outlining all the reasons why your idea won't work. When you point out the weaknesses before executives have a chance, you focus the subsequent discussion on the overall project, not just the problems.

When sharing shortcomings with target users, they will agree with some of your points, but they sometimes may argue back, saying that certain things aren't really weaknesses. For example, the first shortcoming listed for the ArtSmart concept is that not everyone has a mobile phone. If you share this shortcoming with users, you may hear them saying you're wrong: pretty much everyone has a mobile phone these days—or they will—so this isn't really a shortcoming.

Sharing shortcomings with your target audience is a way to figure out if users perceive the same shortcomings or not—a helpful perspective.

10. EXPANSION—WHAT ELSE IS POSSIBLE

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Expansion - What else is possible?

- Other form factors or ID possibilities
  - [expand here]

- Other features and interactions
  - [expand here]

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Expansion - What else is possible?

- Museum visitors' chat room
- Use phone to vote for favorite artwork
- Color star system for recognizing return visitors (shows up on website)
- Allows return users to access old critiques/art
- After two weeks, website displays a link to the museum calendar
- Based on Art Smart choices, phone alerts you to museum events of particular interest to you

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The section on expansion allows you to capture and share a wide range of ideas you had for the concept. Of course, not every form factor or feature can go into a single concept; you've got to make decisions about what ideas to cut. But some of these ideas may be good, and cutting them can be painful; some of the ideas may be part of "Plan B" or a future project. For these reasons I've found it important to include a section on "what else is possible" in the standard conceptual design template.

When an innovation team reaches a sticking point about what to include and what to cut, being able to put someone's pet idea into this slide (rather than making it a key feature) helps the work move forward.

When sharing a conceptual design with executives, you might find that they love an idea you've listed in the expansion section. In the more typical case, showing executives "what else is possible" lets them see you have considered and ruled out competing alternatives.

Sharing the expansion points with users allows them to give you quick feedback about ideas you're cutting from the project. You may find that one of the ideas on the chopping block is actually the secret sauce for your entire concept.

## 11. THE NEXT STEPS IN THE DESIGN PROCESS

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Next Steps in Design Process

- [Outline what you'd do next if you were to continue working on this project.]

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Next Steps in Design Process

- Build rapid prototype of Art Smart
- User test in a museum with our target audience (Is the phone is distracting? Other major concerns?)
- Get programmers to consider feasibility of technology
- Iterate
- Focus groups with different target users
- Build more technical prototype
- Usability and learner studies

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The last new piece of information in a conceptual design is a list of next steps in the design process.

In an industry setting, the section on "next steps" gives the innovation team a chance to discuss and identify what they should do next. This keeps people coordinated around a plan, even if the plan is tentative and outlined in just a few bullet points. As the conceptual design becomes more fully developed, this section will start looking more like a project plan, with a work schedule and deliverables.

I've found that many students are unrealistic (or naïve) about what their next steps would be. Even now, after the dot-com crash, some student teams still list the same next step: "get funding." This gives me a chance to help them understand what steps would come after the first draft of a conceptual design—and it's not fundraising.

12. THE SUMMARY
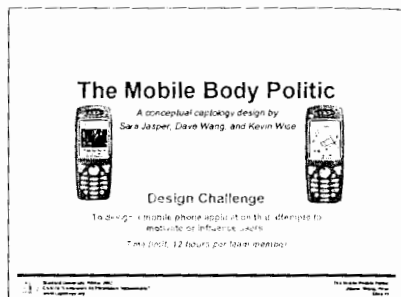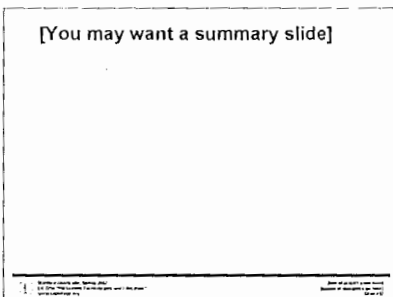
Note: This team did not include a summary slide.

The final section in a conceptual design can take on different forms. The default mode is to provide a summary of the project. Or you can simply cut the summary and focus your conclusion around the "next steps," as discussed in the previous section. Either approach works.

When presenting a conceptual design to decision-makers in an industry setting, I almost always use the summary section for action items: "This is what I want from you now." I typically list bullet points asking for immediate feedback, for support (including money or talent resources), and for a decision about the next deliverables and deadlines. I like to discuss and decide right on the spot, not in some future meeting. This keeps a project moving.

If decision makers decide to kill the project, it doesn't hurt so bad, because you have not spent weeks or months putting your heart and soul into the concept; you've invested only a handful of hours. And if the decision-makers like your concept, you can move forward with confidence and with some preliminary feedback. Getting team and executive feedback early boosts your efficiency and, in all likelihood, your work satisfaction.

What Comes after the First Conceptual Design?

After you've created the first version of a conceptual design, you can build on it to develop expanded versions.

You can complete the first draft of a conceptual design in about 3 hours. Once you have the first draft, you can continue to expand the document as the project moves forward. For example, in one innovation project about digital imaging my team expanded and refined our conceptual design for over 6 months. At that point many other parts of the organization were involved. They started creating their own documents (such as technical requirements or spreadsheets with revenue models), but the central artifact of the project was still in the conceptual design format. We eventually had about 70 pages of content. When we had a presentation to give, we would select the pieces we needed for our audience and purpose—one set of slides for a meeting with a potential strategic partner, for example, and another set for a meeting with technical people inside the company. No matter what audience or purpose, we almost always included user descriptions and storyboards as part of the mix.

As you start to use the conceptual design format, you'll find it's both easy and powerful. A few words of warning, though: First, unless you have a compelling reason, don't change the order of the ideas in a conceptual design. I've created and evaluated over 300 conceptual designs, and I've found that when people change the order of the ideas, they usually weaken their document.

Next, depending on the breadth of your job, you may need to add slides to the conceptual design that deal with business or technical issues. This won't be true for all designers and innovators, but I've found that "blue sky" ideas don't go far in most companies without something more concrete behind them.

Another caution: Realize that when you present a conceptual design, most people will assume you're farther down the development path than you really are; the conceptual design framework creates the illusion of lots of work. That's one reason I like to include the time investment on the title page. If your listeners guess you've invested 180 hours into the project, they will expect excellent answers to tough questions. When they know you've invested only eight hours, they'll have different expectations.

Finally, I want to ask for your help. As you use this method and find ways to improve it, I invite you to share your innovations with me so I can update and refine the template (again, the template is freely available at   ). The template as it stands now incorporates insights from dozens of people. I hope to continually improve this approach to design research. By soliciting ongoing feedback, incorporating the best ideas, and sharing the conceptual design template widely, I believe we can increase the quality, efficiency and enjoyment of our work as innovators and designers.