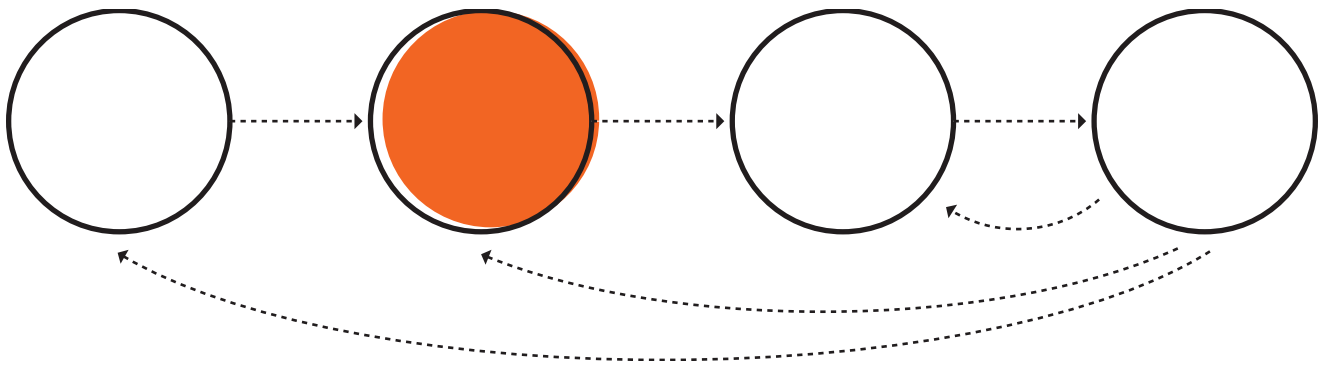# HUMAN-CENTERED DESIGN (HCD) DESIGN STAGE OPERATIONS GUIDE

PLEASE PRINT THIS GUIDE

The Ops Guide is meant to be written in, stapled to, shoved in your bag, and covered in notes. We designed it to be used in the field, so we look forward to seeing your ideas, your research, and your analysis written all over it. A few coffee mug rings and doodles wouldn't upset anyone, either.

Purpose of this Guide

Our Human Centered Design guide series— of which this guide is a part— is an extension of The Lab at OPM's work teaching design to civil servants across federal government. The guide series focuses on the four phases of Human Centered Design: discovery, design, deliver, and measure. For each phase, we have created an operations guide and a concept guide. This operations guide, and its companion concept guide, focus on the design phase. Design comes after discovery research. Design is that phase of work when you take all that you've learned through discovery research and use it to create something that improves people's experiences with a product, process, or system.

This guide is to be read along with our design concept guide. This guide explains how to go about the work of design and the concept guide explains why we do design. Together, the two will give you an overview of —and an orientation to— Human Centered Design (HCD). Additionally, this operations guide will help you enact the design phase of an HCD project. We will walk you through the workflow necessary to move a project from research insights towards product development, providing you with the means and methods along the way.

How the Ops Guide Gives Direction

Throughout this Operations Guide, the authors have elected to speak to a generalized "you". However, the use of "you" should not be interpreted as a directive to one person. "You" in English can mean a single person, but it can also mean a group of people or a team. It is to teams that we are speaking throughout this Guide.

A team-based approach is central to the Human-Centered Design process. By crowd-sourcing our knowledge and understanding through teams, we get to best answers for problem identification, directed research, open-minded review, and open-minded conclusion-making. Therefore, please read "you" as "you all, the team", throughout the Guide. We used the simple "you" form as a convenience to avoid wordiness.

Welcome to theDesign Phase!

Your Discovery Phase is complete or is wrapping up, and you and your team are ready to move into the Design phase. In this phase, the team will build on the research completed in the Discovery phase in order to create action in the form of a designed or evolved product, service, or system from what you learned. You and the team will design sustainable products and services that answer the needs of the people on whom you centered your Discovery phase.

To get started, make sure you've read the Design Phase Concept Guide before starting this Operations Guide. The Concept Guide provides a necessary grounding for work you'll record in this Operations Guide; without reading the Concept Guide, you won't set yourself up for success in the Design Phase.

This Operations Guide, like the Discovery Phase Operations Guide, acts as a compilation of your work. By using the frameworks provided, you will be able to move through and record your design work in a way that both creates an archive and an asset from which to pull project reports.
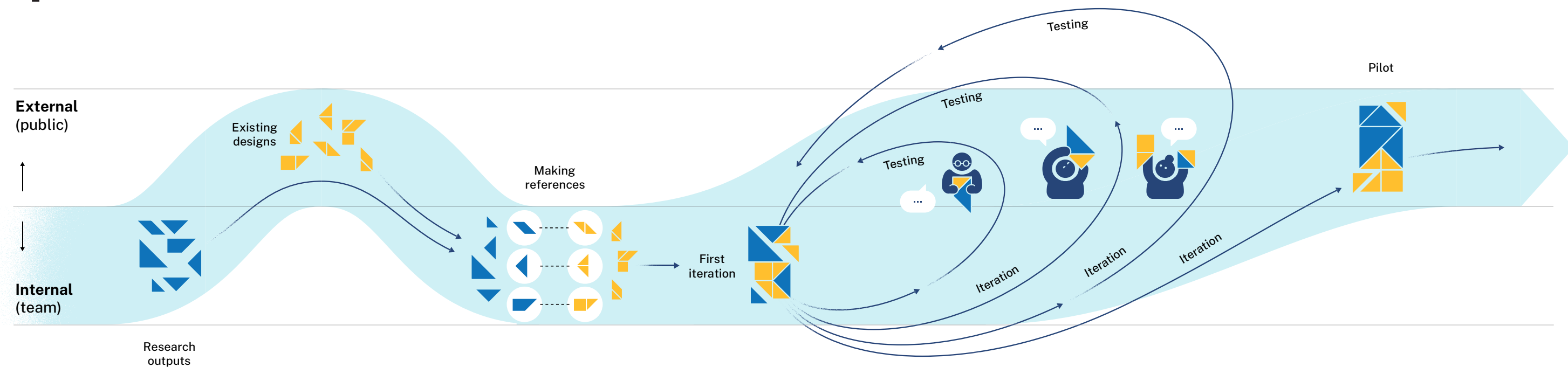
A note on Participants

As in the previous guides in this series, we will refer to the people for and with design teams work as participants in the design work.

Thinking of participants as "users" or "customers" sidelines them into simply receiving products, services, and systems. In contrast, in Human-Centered Design, both the designers and the people for whom the designed products, services, and systems are made participate in the design, use, and evaluation processes. While the designers create the prototypes or models for solutions to participant needs, they can only create and refine these products, services, and systems through continued collaboration with the participants throughout the design process. In this way, the participants have an active role in the life cycle of our work.

A Note on Team Structure

In this Operations Guide, you will map your teams skills, resources, and assets in regards to the requirements of your proposed designs. If your Design phase will almost certainly require technical expertise that your Discovery team does not have, identify and recruit an available and sympathetic expert in that area as soon as possible. By including this person in your core team before you start the design work itself, the team will benefit from their input, and they will be able to invest more deeply in the project than if they were brought in simply to realize your product, service, or system vision.

Design Phase: Operational Timeline

External (public)

Internal (team)

Existing designs

Making references

Research outputs

First iteration

Testing

Testing

Testing

Iteration

Iteration

Iteration

Pilot

Timeline for the Design Process

Like the Discovery Phase, this visualization illustrates how each step of a Human-Centered Design Design project differs in three basic ways: (1) the amount of time a step might take to complete; (2) the amount of internal, team, or individual work versus external, organizational, or public work it will require; and (3) the level of coordination and overlap between steps that you and your team can expect.

Set Expectations

Setting expectations is one of the hardest parts of the design phase. Since you are making something that is not yet known, estimating time and personnel need is by definition difficult. On the other hand, the authors of this guide know that design teams will need to be able to make some sort of time and personnel estimation for supervisors, partners, and others in order to get the go-ahead to start the design phase. You can use the illustration of the design phase work and the accompanying framework in this section to help you envision the work that occurs in the design phase and to aid your planning.

Timeline 1

GETTING STARTED

Each design phase differs depending on the nature of the product, service, or system, the bandwidth and expertise of the team, access to the participants and stakeholders, and the scope of the project itself. If necessary, create a rough map of each of these parameters to understand your timeline.

Get started on building a timeline for your project by using the timeline framework in this section. To fill out this framework, you will need to map answers to the questions on this next page.

The timeline you map at this stage should not be understood as perfect or fixed for your project; it is simply a best estimation of how much time your project will need, based on what you know at this early stage. You can use this estimation so you can set expectations with your supervisor, stakeholders, and teammates for the project term. Hint from a design professional: A good rule for estimating project timelines is to take the total amount of time you think the project will take and then add 20% more time to it. This extra padding allows you to absorb the inevitable bumps in the road that come along with creating new products, services, and systems in our complex, multi-faceting work environment.

REVIEW

Do you have ready access to participants or is access vague or uncertain?

What is the nature of your opportunity spaces? Are they big and conceptual? Or smaller and tactical?

Do you have a team with many conceptual skills and emotional intelligence? Or is your team heavier on technical knowledge?

Use the framework in this section to create your first timeline. Tape, staple, or three hole punch any scrap paper into this book.

First Project Frame: Participants, Stakeholders, Skills, Opportunities, and Timeline

Name of your project:

Mark your access to participants

Participants are immediately accessible. — Participants are accessible only through layer(s) of people or systems.

You and your team

Map your Team Skills as you know them at this time in this space

conceptual

balanced

tactical

Mark your access to stakeholders

Stakeholders are immediately accessible. — Stakeholders are accessible only through layer(s) of people or systems.

You and your team

Map your Project Opportunities as you know them at this time in this space

conceptual

balanced

tactical

Create your first timeline, given what you know, along this line. Use this to scope your design phase.

4 weeks

12+ weeks

Conditions for short project:
(1) Our opportunity spaces are well-defined.
(2) We have immediate and robust access to participants and stakeholders.
(3) We have the required conceptual and practical skills on our team to create and test a variety of products, services, and / or systesms.

Conditions for long project:
(1) Our Opportunity spaces are highly conceptual.
(2) We do not have ready access to participants and stakeholders.
(3) We need to assess team members'practical and/or conceptual skills to ensure we can generate high-value product, service, and/or system designs.

Need more space? Print out additional sheets as necessary or make your own framework on blank sheets of paper!

Principles

Crafting Project-Level Principles

Project-level principles are a way to define the ethos of design innovation. Once you have crafted insights and identified opportunities to shape new service experiences, it is time to create some design principles for the project. To do this, think critically about what those opportunities mean for what you and the team might design. This is high-level, not tacitcal, thinking; crafting principles defines the kind of preferred outcome you drive towards in the design phase, rather than the details of what you shape to get there. Steps to creating and using project level principles:

To set expectations on what they'll accomplish together, design teams create project-level principles at the outset of the Design phase. These principles are valuable tools throughout a project's development, acting as the team's compass. Project-level principles are tactical and immediate. They reflect an organization's strategy and mission, perhaps articulated through a set of global design principles*, but in a focused and outcome-oriented way. Design principles help set project intentions, aligning everyone to a shared project direction. These principles are not tactical goals, but are instead a continual reference for the team to guide design direction while integrating participant feedback. In evaluating a project's success, these principles can be used to track how the project outcomes map to its original intentions. While the majority of design phases attempt to adhere to the design principles articulated at their outsets,

this is not always the outcome. Similar to the Discovery phase, if participant feedback indicates that the team's direction does not serve participant needs, the design phase, including principles, must be refocused and restarted.

In this guide, we will articulate project-level principles to aid teams in their project's upcoming design phase. In large, design-led organizations, global deisgn principles are developed in large-scale, complex initiattives. Because they are communicated to a wide range of stakeholders and guide collaborations across multiple projects, global design principles are part of strategic planning and can take months to develop. For a set of global design principles applicable to design projects in general, please see the Global Design Principles section in the HCD Design Phase Concept Guide.

1. Reflect on your key insights (the ones that you have determined must be addressed in any design solution)

2. Craft principles that articulate the values you bring to your innovation practice as you shape a preferred condition. (A helpful prompt is to ask yourself what do these opportunities tell us about a new approach that might be taken? What kind of experience is most important to the people who will be interacting with this design? What ideas would be embodied in an ideal scenario?)

3. State the intent of these principles. What do you imagine will happen if they are applied? This helps ground your design concepts with intention so that iterations of your idea can be tested in relation to your intent.

4. As you move through the ideation phase (coming next!) and your iteration phases (two steps away!), evaluate your concepts in terms of how much they embody the principles.

5. There's an important distinction here between improving a system or process and a generative design phase. If you find yourself in a position where the system seems to be fine, but just needs slight changes, we recommend that you exit from this Guide and seek out Systems Redesign guidance.

6. If the design opportunities you have found require substantial change to a current product, service, or system, or the creation of a new product, service, or system to complement or build out existing ones, then continue your design process by creating these principles to define your intended impact. Keep these principles front-of-mind to evaluate whether you have made a principled change in the existing experience as you step through the design phase.

Use the framework in this section to create your proejct level principles. Examples of principles are on following pages for your reference. Tape, staple, or three hole punch any scrap paper into this book.

Create Design Principles

Name of your project:

LIST KEY INSIGHTS: Describe the existing condition. These are the realities you have uncovered in your discovery research that provide opportunities to transform what exists into something that is preferred.	CRAFT PRINCIPLES: To establish the ethos of how you want to shape a new reality.	STATE INTENT: By articulating the impact you intend to have. This gives you clues of what to test for in prototyping.	NOTES:

EVALUATE: using the principles as your guiderails for ideation. For each concept you consider, create a design expression for, and test, how

how might you embody these principles? What features or attributes of a product, service, or system could be shaped to surface these values? Remember:

Project principles aren't fixed — they, too, can be iterated on. As you move through the process, they can be edited, grouped, and prioritized as you learn

more. They will help you keep your eye on the big picture as your decisions get more granular and your efine your designs.

Need more space? Print out additional sheets as necessary or make your own framework on blank sheets of paper!
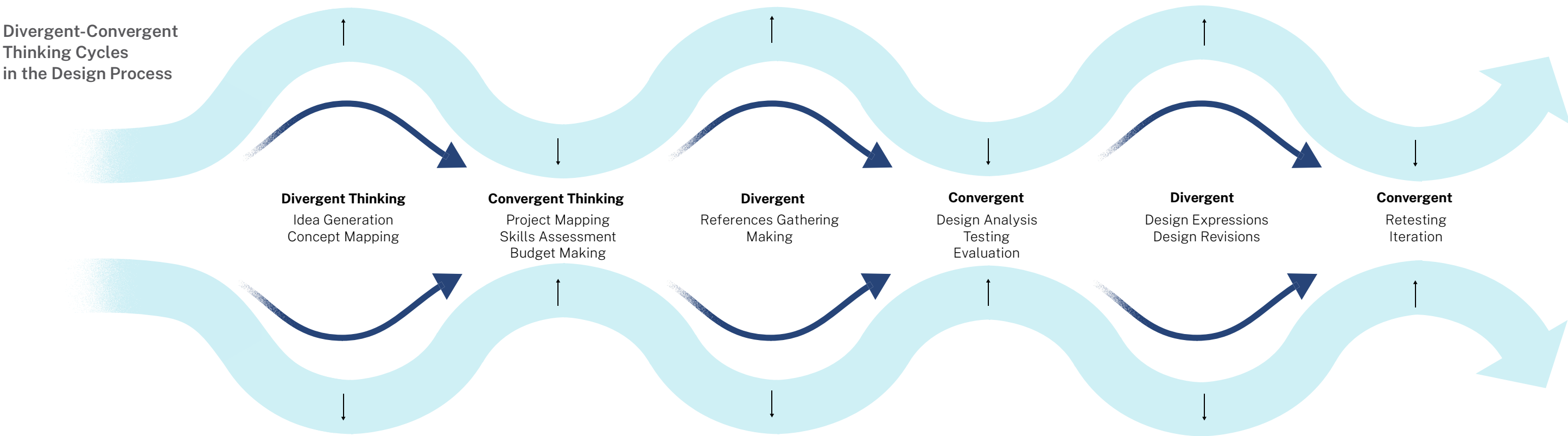
Example context: Improving the waiting room experience in outpatient clinics, Outpatient Clinic Experience

LIST KEY INSIGHTS *to describe the existing condition. These are the realities you have uncovered in your discovery research of the current state that provide opportunities to transform what exists into something that is preferred.*	CRAFT PRINCIPLES to establish the ethos of how you want to shape a new reality	STATE INTENT by articulating the impact you intend to have. This gives you clues of what to test for in prototyping.	EVALUATE using the principles as your guiderails for ideation.
			For each concept you consider in ideation, and then test in prototyping, how might you embody these principles? What features or attributes of an experience, service or product could be shaped to surface these values?
VA patients value being (and being seen as) in control.	***Provide opportunities for autonomy*** *while waiting.*	*Designing for moments of agency will make patients feel more in control even if certain things (prognosis, clinic flow, etc) are outside of their control.*	
Uncertainty is a greater pain point than the length of a wait time.	***Proactively set expectations.***	*If expectations are set proactively, patients will not feel as anxious or dissatisfied.*	Remember: Project Principles aren't fixed – they too can be iterated on. As you move through the process, they can be edited, grouped and prioritized as you learn more.
Patients receive limited and inconsistent information about clinic flow from front-line staff.	***Establish information symmetry:*** *make information about clinic flow available and accessible to all staff and visitors.*	*If patients have the same information available to them that is available to the front-line staff they will have more trust in the facility and therefore the system.*	They will help you keep your eye on the big picture as your decisions get more granular.
Front line staff are afraid to give inaccurate information to patients.	Be transparent, but make no promises.	*If front-line staff are empowered to share what they know, it will produce mutual positive regard between staff and patients.*	

Example context: Crafting Principles for the Human-Centered Design Series

LIST KEY INSIGHTS *to describe the existing condition. These are the realities you have uncovered in your discovery research of the current state that provide opportunities to transform what exists into something that is preferred.*	CRAFT PRINCIPLES to establish the ethos of how you want to shape a new reality	STATE INTENT by articulating the impact you intend to have. This gives you clues of what to test for in prototyping.	EVALUATE using the principles as your guiderails for ideation.
			For each concept you consider in ideation, and then test in prototyping, how might you embody these principles? What features or attributes of an experience, service or product could be shaped to surface these values?
Qualitative research in general and Human-Centered Design in specific are new research and development approaches to many public sector workers.	Provide a stable reference in qualitative research and Human-Centered Design for public sector workers.	This guidance will be follow very consistent informational logic and hierarchy and avoid bouncing between specific and general direction in order to pace participants through the process.	
Federal workers have constricted time and busy schedules	References should be modular, designed to be returned to again and again, instead of studied in large time blocks.	This guidance will be get-throughable.	Remember: Project Priniciples aren't fixed – they too can be iterated on. As you move through the process, they can be edited, grouped and prioritized as you learn more.
Many federal workers have experience working through complex systems and processes.	Establish information symmetry: make information about clinic flow available and accessible to all staff and visitors.	Do not mask the difficulty of the process, but do show the process' levity.	They will help you keep your eye on the big picture as your decisions get more granular.
Federal workers are committed to learning to support their missions.	Any guidance should take this mission-orientation seriously while at the same time fostering an atmosphere of creativity.	This guidance will be verbally clear and visibly light-hearted	

Convergent & Divergent Thinking Model

Divergent-Convergent Thinking Cycles in the Design Process

Divergent Thinking
Idea Generation
Concept Mapping

Convergent Thinking
Project Mapping
Skills Assessment
Budget Making

Divergent
References Gathering
Making

Convergent
Design Analysis
Testing
Evaluation

Divergent
Design Expressions
Design Revisions

Convergent
Retesting
Iteration

Convergent & Divergent Cycles

The design phase is made up on successive cycles of convergent and divergent thinking. This means that, as you move through the design phase, you will have to flow between thinking generatively and creatively and analytically and reductively. The balance between these throught paradigms characterizes a successful design phase, as both are necessary to realizing the potential of the opportunity spaces identified in the discovery phase and meeting the participants' needs.

Divergent Thinking

Call it ideation, brainstorming, "thinking outside the box," or whatever you like — divergent thinking is about exploring what's possible, and it's a core practice of most designers. It happens intuitively, when we allow ourselves to wonder, speculate, or ask "what if?"—but it's also important to do it intentionally throughout your design process.

At this point, you may already have some design ideas in mind. Maybe the strategy, solution, or approach you're seeking has seemed clear from the start. Or maybe you have some insight into the problem you're hoping to resolve, but you still aren't sure how to go about addressing it. In either case, resist the temptation to either fixate on your first ideas or to despair about your lack of ideas. Before you decide to go all-in or give up, you owe it to yourself and to the design process to make time for divergent thinking and imaginative exploration.

The Human-Centered Design process has some intentional moments of divergent thinking built in. They generally follow stages of work that require targeted, tight, and focused thinking. Since you've just done some tightly focused work through defining your project level principles, now is the time to let your thoughts roam free and unhampered.

To get into this expansive mindset, everyone on the team should work to let go of any thoughts that keep you in the world of practicalities, constraints, timelines, and naysaying. Allow your minds to wander into a world of possibility. Go outside. Go for a walk. Talk about or read things that are unrelated to work. Let your mind roam, explore, and play.

Cultivating the spirit and space for this kind of divergent thinking may come naturally to you, or it may take some practice. With practice, it will hopefully come to feel like "the fun part" of your process, where you give yourself the freedom to fully exercise your creativity. Use the activities in this section to get started.Broadly, you can think of the difference through these questions:

Problem frame answers what and why: What are you studying? And why? What is your reasoning for this study? Problem Scale answers how and where: How will you study your problem? Where will you execute that study?

This guide uses four elements to help you determine Project Scale: number of teammates, number and type of stakeholders, number of locations, and number and type of deliverables required by the project. These are not the only elements to use when evaluating your project's scale, but they are useful ones.

Top 5

"Top Five" is a brainstorming activity that gets the team to articulate their ideas, then rank them for discussion and critique. The directions are written as if the team is co-located, but this activity can also be done remotely using video chat applications.This is not about finding the "right" answers.

Directions:

Materials: markers, sticky notes, colored dots

1. Idea Generation: The team sets five minutes on a timer. Within this time limit, each person on the team brainstorms—on their own—as many ideas for the design solution as they can. Each person puts each of their ideas on a sticky note. Individual Ranking: When five minutes is up, each person reviews their ideas and then chooses their top five.

2. Show the Team: Each person places their top five ideas up on a wall for the team to review.

3. Silent Reading: Using a five minute limit, the team silently reads everyone's ideas.

4. Question Time: Taking no longer than 45 minutes, each person now gets to ask questions of each other. You can ask questions in a formal way, by alotting each person a turn. Or you can ask questions in a free-flowing way, allowing whomever feels compelled to speak in the moment to do so. The most valuable questions are those that seek to understand the intention behind each person's idea.

5. Clustering: As different people's ideas become more clear, group together any ideas that seem similar or cut from the same cloth. (In design the act of putting similar things into a group is called clustering and the groups of ideas are called clusters.) Agree on a name for that group of ideas. If some ideas don't belong to a particular group, allow these ideas to stand on their own. Make sure to include them as part of your larger canvas of ideas. You can gain insights simply by observing stand alone ideas in relation to ideas grouped by likeness.

6. Voting: Allow three minutes for each member of the team to take their sticker dots and use them to mark their top five ideas. If you have clusters, use your sticky dot to vote for the cluster as a whole, not the individual ideas that are inside it.

7. Count the Votes: Take the top five ideas and move on to the next activity. If you don't hit five, that's okay! But make sure you have more than one idea to move forward with. You'll test multiple ideas in the field to ensure that you are meeting as many of the participants' needs as possible.

Look at original research through the lens of what is possible for your team, department, or business line in order to see new and better opportunities on which to work. Strive to find the best opportunities. Again, there is no single right, perfect opportunity. Each Field of Opportunity will have within it multiple solutions to the problems you have studied.

Concept Mapping

This activity invites you to see a concept within its context. It prompts your team to share important components around a concept and find the connection among them. It takes a concept and places it against the backdrop of a larger ecosystem or landscape. Creating this big picture helps facilitate more expansive group thinking, problem framing, and solution making.

Directions:

Materials: table tops or big, empty walls

1. Unpack the ideas: Look at the first idea that you selected from the previous round. Individually, use your sticky notes to write all the attributes or components of the idea that you can think of. (This is the "unpacking" part.)

2. Show the team: As a group, share your attributes and components by placing them on the tabletop or on the open wall.

3. Clustering: If there are components that are similar, cluster them together. Agree on a name for the cluster that encompasses the attributes or components in that group.

4. Start the map:Now that you have all the attributes and components out in the open, begin the work of organizing them. Place broader, more abstract components toward the middle. Place more specific, concrete components toward the edges.

5. Draw the map: Draw lines between related components and attributes.

6. Define the idea's structure: As you see how the attributes and components are related, write them down or sketch their flow from one to another. Once you have this initial flow of attributes down, you will have an idea for how this idea works or fits together and how it might drive your design process.

7. Repeat this process: Repeat for each of your ideas.

Convergent Thinking

After you've considered a wide range of possible design ideas through divergent thinking, it's now time to bring your idea—and your mindset—back to the world of constraints and practicalities. Now is when you lasso your ideas out of the big blue sky and tug them back to earth. Now is when you see which of your ideas holds up and maintains its integrity when confronted with the con-

straints, curve balls, and imperfections of daily life. By observing how your ideas contend with day-to-day reality, you'll know which ones are ready for further development.

Like divergent thinking, convergent thinking will happen naturally and intermittently throughout your design process—whenever you prioritize, refine, or select ideas to pursue. It's important to be as conscientious and deliberate as possible when moving into this unique frame of mind and mode of work.

Convergent thinking is decision making. The decisions you're making may be simple, tactical choices about what to focus on or how to organize your ideas. The decisions you're making may be significant, strategic conclusions about the direction and outcomes of your work.

There may be tough choices as you pare down, edit out, mix together, pick between, and let go of some ideas in favor of others. There is an expression in the literary world that sometimes you have to "kill your darlings," which means walking away from ideas you really like if they don't serve the greater good of your project. For example, you might really, really want to design a game, but, when you look at the participants' needs and project constraints, a game just won't answer to both. So you have to walk away from that idea.

Convergent thinking may come to feel like "the hard part" of your design process, but it's an essential step in transforming your intentions into action. Doing this in a group requires careful communication and consensus building.

The framework in this section provides some tools and techniques to help you start identifying your constraints and reality checks, so that you can discern which of your design ideas is the most ready and able to meet the real world.

Use the Project map to help you define the constraints in your design project. These constraints include: the who, what, when, where, and why of your project

Convergent Thinking Framework: Understand the constraints of your ideas

WHAT What are you calling your design? How should we name or refer to it?

Title and subtitle:

WHERE What physical environment(s), geographical region(s), or other context(s) will you focus on?

Location(s) to explore:

WHEN What particular moment(s), period(s) of time, or sequence(s) of events will you focus on?

Timeline(s) to explore:

WHY What is the design principle this design aligns with?

Principle the design upholds:

WHY What participant problem does it solve?

Principle the design upholds:

WHO Who will you focus on?

Stakeholder map:

Primary Stakeholder

Secondary Stakeholders

Peripheral Stakeholders

In the circles above, place the people/groups you think you will focus on, and in the space below, explain a bit more about who they are.

Demographic, professional, situational details:

Use the Team framework to define the skills and resources you have or do not have in your project team.

Skills & Resources Framework: What skills and resources does that team have?

Project Scale

Roles
- ☐ Project Manager
- ☐ Design Lead
- ☐ Design Maker
- ☐ Contractor Evaluator

Timeline
- ☐ Short term, 2-8 weeks
- ☐ Medium term, 9-12 weeks
- ☐ Long term, 12+ weeks

Team Size
- ☐ 1-3 people
- ☐ 4-6 people
- ☐ 7+ people

Leadership Buy-In
- ☐ Active sponsorship
- ☐ Delegated sponsorship
- ☐ Passive sponsorship

Sites
- ☐ No physical site
- ☐ Single site
- ☐ Multiple sites

Partner teams to work with
- ☐ 0 additional teams
- ☐ 1-2 additional teams
- ☐ 3+ additional teams

Team Skills

Writing
- ☐ Article style
- ☐ White Paper style
- ☐ Technical
- ☐ Communication

Visual Design
- ☐ Illustration
- ☐ Data visualization
- ☐ Layout
- ☐ Communications

Programming
- ☐ Frontend
- ☐ Backend
- ☐ Database

Access to Tools
- ☐ Pen + paper
- ☐ Microsoft Office
- ☐ Survey software
- ☐ Visual design software
- ☐ Off-the-shelf software
- ☐ Customizable software

Additional Skills
- ☐ _____
- ☐ _____
- ☐ _____

Partner Skills

Writing
- ☐ Article style
- ☐ White Paper style
- ☐ Technical
- ☐ Communication

Visual Design
- ☐ Illustration
- ☐ Data visualization
- ☐ Layout
- ☐ Communications

Programming
- ☐ Frontend
- ☐ Backend
- ☐ Database

Access to Tools
- ☐ Pen + paper
- ☐ Microsoft Office
- ☐ Survey software
- ☐ Visual design software
- ☐ Off-the-shelf software
- ☐ Customizable software

Additional Skills
- ☐ _____
- ☐ _____
- ☐ _____

Data

Data Ownership
- ☐ Owned by partner
- ☐ Owned by design team
- ☐ Not owned by either team; data owned by third party

Data Generation
- ☐ Generated by partner
- ☐ Generated by participants
- ☐ Generated by Discovery Phased

Data Type
- ☐ Qualitative data
- ☐ Quantitative data
- ☐ Mixed data types

Leadership Buy-In
- ☐ Active sponsorship
- ☐ Delegated sponsorship
- ☐ Passive sponsorship

Additional Notes on Data
_____

Use the Resources Budget framework to figure out how many resources you have for your project, and if they will be sufficient for the task at hand.

Resources Budget Framework: What will you need to build your design expression?

Use one of these frameworks for each design concept you've decided to build an expression for and test. What will you need to make this design concept a reality? Be honest here! It's much better to realize at this point that you do not have the resources, whether that's time or skill or access, that you need to do good work than it is to forge ahead and not reach the best possible expression of your design concept.

Name of your design:

Description of design
Briefly describe your design in this space. Refer back to your Concept Breakdown framework, if you need to.

Team members
Who will focus on this design and its testing? What are their roles? No less than 2 people, no more than 4, per concept.

Name _____ Role

Name _____ Role

Name _____ Role

Name _____ Role

Design skills the team has:
What skills do you have that will help make this design a reality? List them from your sort here.

Design skills the team needs*:
What skills do you need to make this design a reality? Check against your Concept Breakdown

Timeline for design & testing
On this timeline, schedule your timeframes for first round design making, recruiting your participants to test with, scheduling the tests, testing itself, evaluation for each test, and a realistic idea of refinement and restesting for each of the 3 recommended iteration rounds. If you start this timeline

and realize you don't think you'll have enough time in your overall schedule to get through three iteration rounds, go back and do another Concept Breakdown framework for the concept you started here to make your concept smaller and more manageable.

Building Out Ideas

Now that you have your design ideas generated and your constraints mapped, start thinking about what those design ideas might look like in the real world. This is your first step towards making expressions of your design concepts. When we say design expressions, we mean the physical manifestations of your design concepts: the product, service, or system that embodies your concept and brings it into a form that participants can use. To take this first step, designers use collections of images, sounds, and materials called references. References are the bridge between the design concept and the design expression.

In the Design Phase Concept Guide's Envisioning Ideas section, we talk about references as means by which to talk about the emotions and/or general direction the design seeks to evoke. In addition to this function, references can also be used to help the team understand greater specifics of the team members' ideas and communicate those ideas to stakeholders. In this way, references do double duty: emotional references can show how a design concept revolves around giving people a sense of community, for example, while in this section, we show how references can also be used to forward the team towards a first design expression, also known as a low fidelity prototype.

Because design teams evolve or create new products, services, or systems, there's no exact photo or sketch or recording of it that exists. For this reason, it's essential to develop a collection of references that are like the product, service, or system you're envisioning in order to express all your thoughts on how a design might look, feel, and function. The purpose of using references, whether drawn, photographed, recorded, et cetera, is to meet four primary goals:

- To explore nuances in a proposal, system, or idea.

- To understand those nuances.

- To clarify those nuances, especially if they act within a complex system.

- To communicate the steps above to others who may or may not be present in design meetings.

References help design teams show each other and their stakeholders their ideas. By accompanying these collections of references with words, whether written or verbal, the team can more easily understand what it collectively is thinking or what an individual teammate is thinking, keep a record of that thinking, and edit the idea.

Each member on the team should use the reference deck framework below to build references for their design concepts that they would like to forward into design expressions. Print out as many frameworks as you need to. Use the following directions to move through this activity.

Take anywhere from a few minutes to a few days to build your reference decks. You can pull references from the internet, cut them from publications, take photos and print them, or draw them. Accompany your references with text to describe what contribution the reference is making to the design concept. This is not a collage: it is a thoughtful compilation of real-world examples to show your teammates your ideas.

References Framework: What is your design like that already exists?

Name of your design:

Reference 1:

Where is this reference from?

Directions: Use the boxes below to show and explain your reference. If you only use one part, that's okay! Print a new sheet for each reference or use multiple sheets to fully explore your reference.

Print out and tape or draw the part of the reference that interests you in this space.

What's interesting about this part of the reference?

How does this contribute to your design?

Print out and tape or draw the part of the reference that interests you in this space.

What's interesting about this part of the reference?

How does this contribute to your design?

Need more space? Print out additional sheets as necessary. You can reference more than two parts of a single design.

Directions

Reconvene as a group to discuss and decide on the design concept(s) the team will forward to physical expression. Facilitate the discussion and decision-making through

1. Present your reference decks to each other, using the Question Time format from the Diverget Thinking section.

2. Silently vote on the expression you would like to forward to a low fidelity prototype. If there is a tie and

3. If you have time and bandwidth to forward more than

recording the name and some details about each proposed design in the framework provided and following the steps in this section.

one expression, do so. The additional thinking will result in a better, more meaningful design solution for participants.

4. If you do not have time or bandwidth to forward more than one design expression, discuss the possbilities through the lens of your project constraints and decide as a team on the best expression to forward.

References Framework: What is your design like that already exists?

Name of your design:

Reference 1:

Where is this reference from? _____

Directions: Use the boxes below to show and explain your reference. If you only use one part, that's okay! Print a new sheet for each reference or use multiple sheets to fully explore your reference.

Print out and tape or draw the part of the reference that interests you in this space.

Print out and tape or draw the part of the reference that interests you in this space.

What's interesting about this part of the reference?

What's interesting about this part of the reference?

How does this contribute to your design?

How does this contribute to your design?

Need more space? Print out additional sheets as necessary. You can reference more than two parts of a single design.

Communicate

At this point, you've analyzed your project's affordances and constraints through convergent and divergent thinking, generated multiple design ideas, built those out with references, and discussed them and figured out what to forward. Now take moment to reach out to your stakeholders to communicate all this progress.

Using this critical moment to bring stakeholders up to speed on what you've done allows you to gain agreement up front on your direction. Going through this step will help you avoid missing key points of view, gives you an opportunity to start socializing your design, and clears the way for a rational, evidence-based assessment approach whose results will be accepted across the organization.

Without this step, it's easy to find yourself revising and revising as people question your direction and methods, which causes the goalposts to move over and over again for the sake of someone saving face or taking credit. Remember that you are trying to make impact. If you have agreement on the direction and testing, and you go out and find that the tests tell you the your prototype isn't working, you'll be much better able to bring that news to stakeholders if you brought them along in the first place instead of keeping your process under wraps. Over the course of the entire HCD process, socializing approaches and being transparent sets you up to save yourself and your organization from implementing an ineffective strategy, and presents an opportunity to learn and create the next, better version.

Making

The methods you use to start making your design concept into design expressions depends on what your concept is. Look back at your references: what is the nature of the expression you're creating, based on that collection of references? Is it a product? A service? A system? Or is it more complex than that, like a large service that needs multiple products to support it? If you're unsure, review the Designed Things section of the Design Phase Concept Guide, where you'll find explanations of the nature of Products, Services, and Systems.

Depending on what you're designing, you can select from the following making methods to generate version 1 of your design expression, or investigate design methods from other sources.

Card Sorting Method

When: Card sorting is a useful framework for any design that centers around gathering information from or distributing it to participants. Things that deal with displaying or gathering information are usually products. To function, information-based products also require systems to support them "on the backend", which means that some people or some system will need to process the information that's gathered or ensure the accuracy of the information that the product displays. Keep this in mind as you move into your product design; it probably won't stand alone. If you don't already have systems in place to support the product, stop your design phase now and re-scope; your design is too big. You'll need more time to create product-and-system design that works well together.

What: Card sorting is helpful when you are designing products that distribute a lot of interconnected information to participants. This method is often used by designers who are creating digital products, like websites, but you can also use it when making paper-based products or instructional materials.

Why: You may be very close to a service or system you are designing for, and so it may be hard to see it from the outside. Building a product that's in tune with participants' thinking increases the chances that people will successfully absorb and use the information you provide. As a result,

they're more likely to trust the product.

Get Started: The materials you need for a card sort are cards (plain index cards will do), a bold marker and your discovery findings.

Review: Review your discovery findings. What are the topics or themes of information that the participants need to know?

Organize: What is the hierarchy of this information? Is there a hierarchy? If there is, organize the information in the way your research indicates it should be organized.

Write: Condense the topics and themes of information into short, descriptive phrases. Write these phrases on the index cards using a bold marker. All the phrases should be written in the same color.

Reuse: This framework can be used in at least two, if not more, design and testing cycles. In the first, most low-fidelity design, card sorting can help you understand the information and the hierarchy of that information that participants want and need. In a second, medium-level fidelity prototype, card sorting can be used to start identifying layout and formatting for the information.

Card Sort Framework: What are is the information that you want to give people?

When to use: Use this framework when you're designing a product, service, or system in which the core purpose is to transfer information either to or from the participants to another party.

Name of your design:

Directions: Write a category of information that you need to give to your participants on each square. Have them sort the cards and tell you the order of the information that makes sense to them.

Need more cards? Print out more copies of this framework, or just cut out rectangles from a blank page!

Storyboarding Method

When: Storyboarding's utility is in designing human-to-human interactions. These interactions are often characterized as services. As references, think of the service of a triage nurse going down a checklist with an ER patient, or a security official guiding people through security screenings. These designs may seem lightweight, but be aware that to successsfully introduce and maintain them requires the buy-in of many groups: the people providing the service, their supervisors, the people administering the space in which the service occurs, et cetera. All of these groups are stakeholders in this design, so design and test accordingly.

What: Storyboards offer a structure for seeing how your concept works in real life, moves through it, and seeks to accomplish its goal. A storyboard forces you to think through the tough transitions, invisible moments, and entire cast of people who will need to interact with your design concept. Again, start with a low fidelity version to get down the basic intereactions, then use the framework again to one or more frther times to refine the details of the interactions as you hear about them from participants.

Why: : A storyboard is a series of comic book panels. Its structure helps illustrate how your concept might work in real life. By using pictures and panels, a storyboard prompts you to think about how and when your concept comes to life— whether that is the moment when a person clicks on a webpage or the moment when a person picks up the phone to call a service hotline. A storyboard also prompts you to

think about the cast of people who work behind the scenes to make your design concept available and helpful to users and the cast of people who will use your concept.

Get Started:Use the framework to draw out to draw out the interactions required for participants to use your product, service, or system concept. You'll find that drawing the interactions helps you see the places where you've made assumptions regarding how easy an interaction might be.

Your storyboard should comprise at least three elements: people, place, and pathway. You don't need to be "good at drawing" to make storyboards. You can draw stick figures to represent people and you can draw happy/sad/perplexed faces with speech or thought bubbles to represent their feelings and thoughts.

If you feel like you have a good idea of how your product, service, or system will work, jump right into creating two storyboards.

The first outlines your concept's debut "in a perfect world", while its second explores its debut "in the real world".

Use the framework to draw out each step of a participant's progress with your concept. How does the participant find or encounter the concept? What information do they need to get started and continue? Will they need to navigate or coordinate with other systems to make progress? How will they know they've successfully completed the process?

Storyboarding Framework: What are the interactions that you're designing?

When to use: Use this framework when your design consists of several human-to-human or human-to-computer interactions linked together, or when you're building any type of system. Storyboards help you see gaps

Name of your design:

Directions: Use each one of these squares to draw the touchpoints or action scenes of your interactions or system. Try to use any text beyond a one line caption to describe what is happening in the boxes.

1.	2.	3.
Caption	Caption	Caption

4.	5.	6.
Caption	Caption	Caption

7.	8.	9.
Caption	Caption	Caption

Need more space to finish your storyboard? Print out more copies of this framework, or just draw rectangles on a blank page!

Storywriting Method

When: Storywriting is a framework for making that is useful when, despite all your analysis and study the previous stages, you and the team are still not quite sure what to make. This could be because the specific need of the particpants remains vague or undefined, or because circumstances like team composition or leadership have shifted considerably since Discovery closed. Don't worry if you find yourself in this position; storywriting is an acccessible, economically responsible way to draw more strong lines around what you might need to design to address participant needs.

Why: By writing the story of your concept's debut, you can begin anticipating —and planning for—the expected and unexpected. You don't have to be Hemingway to tell this story. You simply need to set aside time to jot down your thoughts and order them. Use what you learned in your discovery research as the raw material for your story. Write a story in which the people you're designing for will recognize themselves.

In this story, try and capture the spirit, or "the gist", of your design concept— not its specifics. You needn't include every little feature of your concept. Be more general. Give people an overview and a feel for your concept and the experience, or experiences, it may evoke.

Get started: Use the Six Ps Writing Method to get started. These are: Principle, Paramounts, Players, Place, Path, and Point of View. In the Six Ps framework in this section, you will define and fill out six aspects of your story. Using the boxes below or a blank sheet of paper, follow the instructions to create these aspects.

One functional writing note: review the Plain Language Guidelines from the Federal Plain Language Action and Information Network as you write. This will help you ensure that you write with clarity from the start.

Reuse: You can use this framework for the first two rounds of fidelity-making, just as in the methods above.

Storywriting Framework: What will you need to build your design expression?

When to use: Use this framework when you still can't quite put your finger on what you're going to build, if your design consists of several human-to-human interactions connected together, or when you're building any type of system.

Name of your design:

Premise This design exists because...

People The people in this design are...

Paramounts The most important parts of this design are...

Place This design lives or functions where...

Pathway This design lives or functions where...

Point of view This design is led by...

Narrative Version 1 In this space, link together the elements you wrote above into a first version of your design narrative. What gaps are there in your narrative? Where are there leaps in logic or connection that you'll need to bridge? What assumptions are you making about how the design will function or be used? Now is the time to start the process of figuring all these details out.

Analyzing Designs

Use the frameworks in this section to analyze the design or designs that the team has decided to forward and test different expressions of their parts. Through the earlier processes of divergent thinking in idea generation and convergent thinking in constraints and skills mapping and references gathering, the shape of your design creation has emerged. Break that shape down into its component parts to determine how to start the making process.

To break down your design, examine it analytically to understand if it is simple, complicated or complex. Some brief definitions of these are:

Simple: A simple design is one that can stand alone, without core dependencies on any other product, service, or system that will make or break its success. A fan is an example of a simple design.

Complicated: A complicated design is one that has many parts that all have to work in unison for the designed thing to function. A common example of a complicated design is an engine. It has many parts, including the fan from the simple example above, but the parts are easily ennumerated, can be replicated, and can be fit together according to a set of instructions.

Complex: A complex design is one in which many, sometimes competing, sometimes themselves complex, items come together. An example of this is the airline industry, which in order to function has to bring together the engines from the above example, the business of running airlines, the policy worlds of safety and environmental regulations, of labor relationships, of geopolitics, of market demand, and of many other intricate systems.

Complex Designs

If you break down your design and find that, in fact, you have proposed something that is complex, not to worry. However, please do return to your Design Principles, Divergent, and Convergent Thinking activities and center on a less-involved design idea.

A complex product is, by nature, a tenious design. Even if you can realize it, its own complexity renders it brittle and prone to breakage. Most of the time, however, these designs are not even realizable because they depend on too many disperate factors to all come together. Please do not attempt to design a complex product, service, or system unless you have years of lede time, deep, cross-institutional buy-in, sit at a very high level, strategy position in your organization, and have a reasonable belief that you will occupy that position for years to come. Even if you believe you have leadership buy-in, unless you are the leader, we would not advise this course.
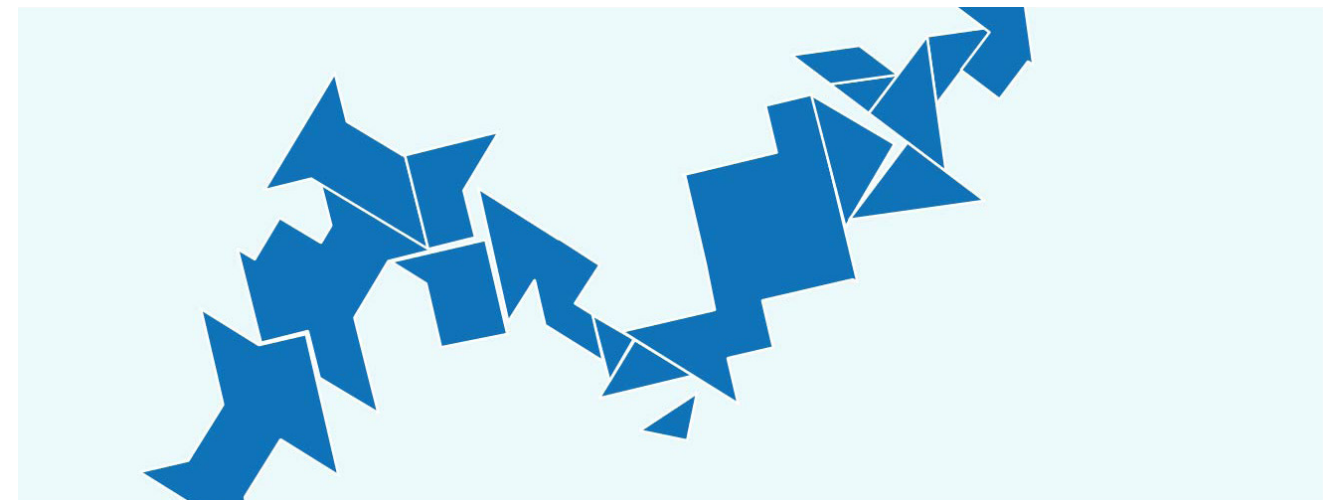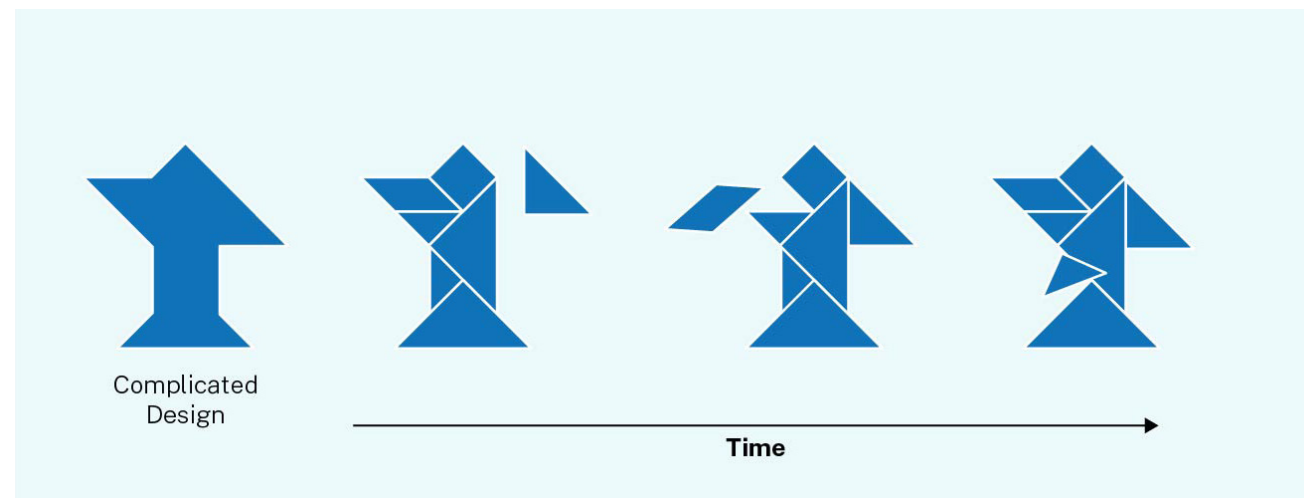
Complicated Designs

If you break down your design and find that you've proposed a complicated design, that's okay. However, it will have implications for your timeline. In a complicated design, you and the team will need to identify all the parts of the design, isolate them, create different expressions of them, test the expressions, bring the parts together in an intentional, rational sequence and test each time you add a part, then finally test the design as a whole. It is a do-able process; however, it can be quite lengthy.

In addition, be aware that complicated designs are brittle. With so many parts comprising them, they tend to break over time. Be aware of maintenance requirements if you decide to design a complicated product, service, or system.

Complicated
Design

Time

Simple Designs

simple
design 1

simple
design 3

simple
design 5

simple
design 7

simple
design 2

simple
design 4
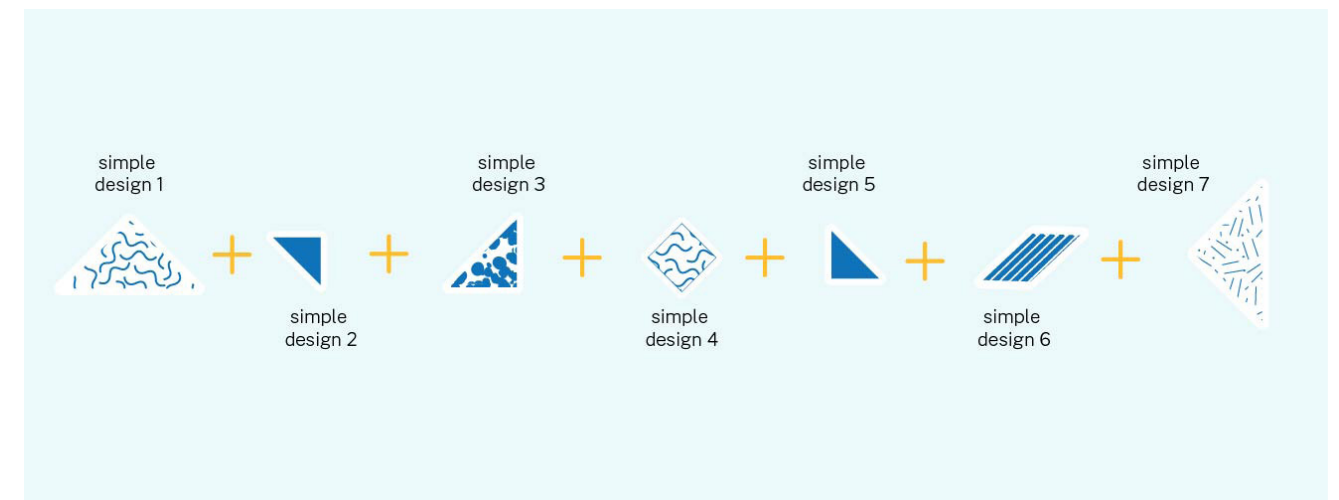
simple
design 6

We recommend that you attempt to create simple designs. There is power in simplicity, and power in a series of simple designs, well-executed, acting in concert.

If you create a series of simple designs that answer participant needs, with time it is possible to serve your most complex design principles and achieve high-level strategic goals. As the global design principles in the Design Concept Guide state, though, getting to simple is hard. A simple design is not always one that is obvious: it is focused and flexible. Focused because it answers participant needs; flexible because it can function as context and usage changes over time.

Use the framework below to start analyzing the design concepts you and the team have come up with. Print out more pages or just draw the framework on blank sheets if you need more space.

Design Analysis Framework: What are the required parts of your design expression?

When to use: Take apart your design to understand how it works as a whole. In engineering, this is known as "identifying variables". Each part, or variable, will have to be designed.

Name of your design:

Directions: Use these rectangles to first describe your design as a whole, then to identify its parts. Break down any big parts into its smaller, most basic component parts. This is like building with Lego in reverse.

Description of part, written, drawn, or both.

Name of part _____
Description of part, written or drawn.

Name of part _____
Description of part, written or drawn.

Name of part _____
Description of part, written or drawn.

Name of part _____
Description of part, written or drawn.

Name of part _____
Description of part, written or drawn.

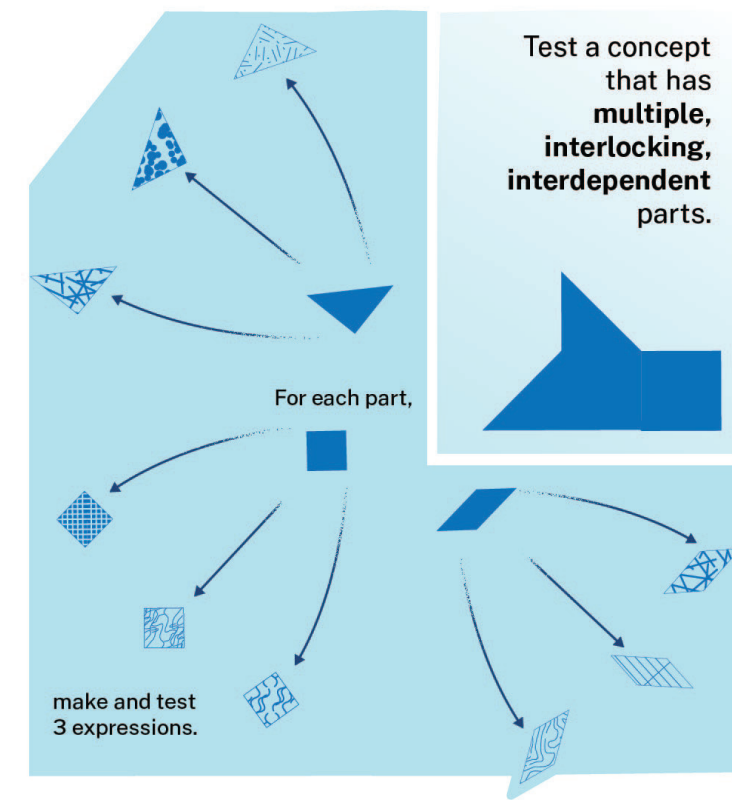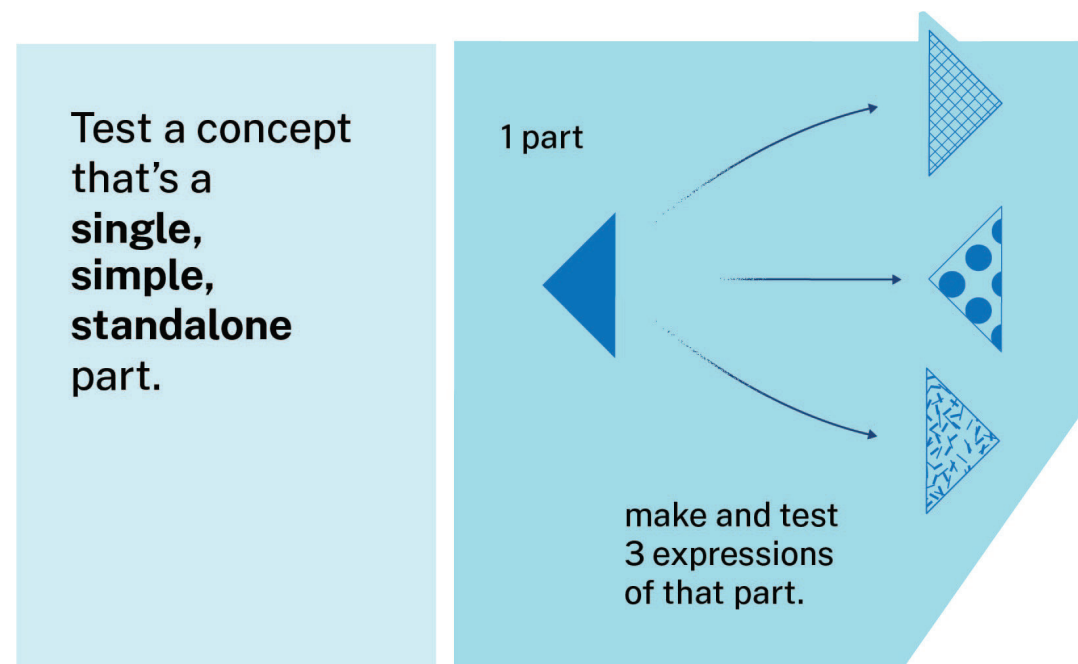Name of part _____
Description of part, written or drawn.

Need more cards? Print out more copies of this framework, or just cut out rectangles from a blank page!

Generating Design Expressions

Single Part Designs

This diagram shows how to think about analyzing straight-forward, scoped-down design concept that's made up of a single, simple, standalone part.

This design concept could be something like rewording a single letter or rescripting a specific phone call. To create three different versions of this single-part design expression, create three versions of the re-wording or three versions of the re-scripting to test with participants.

Test a concept that's a **single, simple, standalone part.**

1 part

make and test 3 expressions of that part.

Test a concept that has **multiple, interlocking, interdependent parts.**

For each part,

make and test 3 expressions.

Multi-Part Designs

Most designs, however, are more complicated than they appear. Even if you can use one or only a few words to describe your concept, that concept is usually made up of many different parts. This diagram shows how to think about analysing and expressing a design concept that is made up of multiple, interlocking, and interdependent parts.

Here are two examples of multi-part design concepts: a website and an in-person greeting program.

In the case of a website, components that need to be designed include but are not limited to text, images, pages, and interaction points like buttons. There are also intersystematic dependencies such as website hosting, legal and techincal compliance, visual and functional links with the systems around it, and be regular maintenance that must be designed. In this way, building a website requires the build of both a product that has many components, and a system that supports or connects to that product.

In the case of an in-person greeting program for people visiting and navigating government buildings, the finished designed system is also comprised of multiple parts. In this case, the team would need to design for who the greeters and where they come from in a labor pool, who their management would be, what might be scripts for the first greeting, what happens when they need to go on break, what happens if they can't answer someone's question, where their pay comes from, and, if they're voluteers, how will you attract people to and refresh the volunteer pool? After breaking down the service of a greeter system into its component parts, the team will then create different expressions of these parts, test them, then test them together. As you can tell, multiple rounds of testing would be required to ensure that this service works well.

Use the framework in this section to create different design expressions for your work. Your goal is to find the best answer for the participants, so the work is worth it. Think back to the bicycle helmet example: each expression the designer thought of answered a different variation of participant need, so each expression is valid. But the arbitor of what is needed is the participant, so proposing each of these expressions to show the participants what could be is paramount. If you only choose and test one expression, you might as well tell the participants that you understand their experience better than they do. And of course, as you know from the HCD Discovery Phase, you know that you don't know.

Design Expression Framework: What are the required parts of your design expression?

Name of your design:

Directions: Use these rectangles sketch or describe the different ways this design part can be expressed.

Expression 3

Expression 2

Expression 1

Description of part

Need more cards? Print out more copies of this framework, or just cut out rectangles from a blank page!

Testing Your Designs

Now that you've created three different versions of you design expression to test with participants, it's time to test those designs. It's absolutely normal to feel like your designs will not be well received, or that you've missed the mark on this version; you probably have! When the designers of this Guide series have a first draft of any of these works, they are filled with gaps we have to fill and assumptions we hadn't even realized we'd made. This first version is just the starting point for your design. If you need to review the concept guidance and overview of design and testing to feel like you have a handle on this work, reread the Iteration section and the Feedback section in the HCD Design Phase Concept Guide.

Construct your test

Treat design phase testing as a small version of the HCD interviews from the discovery phase. As you move through testing rounds and learn more about what participants want and need from your design, your testing questions will narrow.

Ask open ended questions; don't fill in silence for the participant; get them to vocalize their experience with the design to let you know how they perceive it. Review interview techniques in the Discovery Phase Operations Guide if you need some refreshment on how to ask open-ended questions.

Note the qualities of the participants' interactions with the design. Do they pause and have to think for a long time when they're trying to understand a theme? Do they have to search around for a button in your interface design, or ask questions about the instructions you wrote? All of these interactions should go into your testing notes: they are what we call points of failure in a design, and you want to find them!

Testing Frameworks

Prepare for testing by planning out what part of the design you're testing, how you will introduce the test, and the questions or prompts you will provide. An outline for testing from each of the making activities is provided in this section.

Also provided is a framework for planning and recording the results of your tests. If you start planning out your test and realize that you haven't quite broken down your design into the simplest component parts yet, as you thought you had, not to worry. Revisit your design analysis, break it down further, and then replan your test.

Testing: Cardsorting

Who: Test with people who will most likely use your product, service, or system if it is eventually built. They can be people you've spoken to during the discovery phase, but they don't have to be.

For more guidance on recruiting testers, refer to the recruiting section of the Discovery Operations Guide.

Scheduling: Your card sort should take 30 to 45 minutes, depending on the complexity of the information.

How: Lay your card sort out on a table. If there was an information hierarchy that emerged from your discovery research, organize the card sort according to that hierarchy. If you are doing this test digitally, ensure you're using a collaborative interface that allows people to freely and easily move and change the cards around.

Depending on how prescriptive you need to be, use one of the following card sort approaches: open-ended or guided.

In open-ended card sorting, you let the users organize the cards however they see fit. You do not provide a structure, guidance, or directions.

In guided card sorting, you provide a small amount of guidance and instruction to the user and you introduce a framework.

Guided Card Sorting Examples:

- Importance Spectrum: You can invite participants to organize topics along a spectrum, such as "critical to somewhat critical to unnecessary" or "immediate to somewhat immediate to not immediate".

- Categorization: You can invite participants to organize topics by group (likeness) and then organize the groups in relationship to each other.

- Sequence: You can invite participants to organize topics by sequence as in, "This goes first, then this, and then this…"

Whichever type of card sort you decide is appropriate, ask participants to organize the cards the way they think best, and to think out loud as they organize. Take notes of what they say. If they fall silent, prompt them by asking questions like "What makes you move that card?" or "Why does this card make more sense here?"

Testing: Storyboards

Share your story with those who'll likely enact and administer your concept and those who'll likely use it. They can be people whom you've spoke with during the discovery phase, but they don't have to be.

For more guidance on recruiting people who can help test the viability of your design concept, refer to the recruiting section of our HCD Discovery Phase Operations Guide.

Scheduling: 30 minutes

How: Generate a list of questions to guide your conversation. Go beyond questions such as "Did you like the idea?"

1. Do you recognize yourself in this story?

2. What does this story get right? Where does it ring true?

3. Where does it not ring true, and why?

4. What critical elements does this story capture? Overlook?

5. What questions do you have after reading this story?

6. What questions does this story answer for you, if any?

Consider this interview similar to a "mini" discovery interview. To review the structure of a discovery interview, refer to the HCD Discovery Phase Operations Guide. Take careful notes as you talk with participants about your design concept story. These notes will help you decide where and when to revise your concept.

Testing: Storywriting

Share your story with those who'll likely enact and administer your concept and those who'll likely use it. They can be people whom you've spoke with during the discovery phase, but they don't have to be.

For more guidance on recruiting people who can help test the viability of your design concept, refer to the recruiting section of our HCD Discovery Phase Operations Guide.

Whether you're using one of the making methods provided in this guide or a method from a different source, use this framework to help you plan your tests.

Testing Framework: What are the required parts of your design expression?

The first and consistent variable in every test you make for your design is: does this design make sense to the participant? Start there, before you drill down into testing the specific parts that make up your design.

Name of your design:

Directions: Use this framework to plan your tests. You can test multiple parts of your design in a single sitting, but make sure the parts of your design are grouped by some logic, like time sequence or type.

Part(s) of design being tested:

1. Do the participants understand the design? Do they know where to begin? Do they know where their task(s) end? Is the path through the design clear?

1.
Explanation of test:
How will you introduce the test to the participant?:

Testing script or questions:

2. Name of part:

2.
Explanation of test:
How will you introduce the test to the participant?:

Testing script or questions:

3. Name of part:

3.
Explanation of test:
How will you introduce the test to the participant?:

Testing script or questions:

Need more cards? Print out more copies of this framework, or just cut out rectangles from a blank page!

If you need to, use the following framework for notes during your test. You can also simply use a notebook or scratch sheets of paper.

Testing Notes Framework: What happens in your test?

Treat each test as a tiny HCD interview. Remember to record both the answers to your questions as well as your observations of the participants actions and emotions.

Name of your design:

Name of participant, if necessary:

Participant stakeholder group:

Notes and observations:

Need more space? Print out more copies of this framework, or just use a blank page!

Use the testing evaluation framework to see how your design or designs worked in testing. Make additional notes or analysis on additional sheets or on blank sheets of paper.

Test Evaluation Framework: What do your test results mean?

Name of your design:

Directions: Use this framework to record and analyze how surprised you were regarding the participants' understanding and use of the prototype, and what these results mean for your next steps.

Overall result: How easy was it for the participant to start using your design?

Not easy — Easy

Notes on these results:

Design part 1: How well did the participants understand the design?

I had to prompt them several times. — I was able to be silent while they used the design successfully.

How will you change the design to improve it?

This design isn't working.
That's good to know!

Back to design concepts.

Our test results fell in this range. We will make changes to our design or perhaps break it down to something more simple and retest.

Design part 2:

This design part was unclear to participants; I had to explain it. — This design part was clear; I sat in silence while participants used it successfully.

What will you change to improve this part of the design?

Design part 3:

This design part was unclear to participants; I had to explain it. — This design part was clear; I sat in silence while participants used it successfully.

What will you change to improve this part of the design?

New iteration
Participants understand the design perfectly.

Print out new Design Analyis frameworks and further refine your design.

Need more space? Print out more copies of this framework or use a blank page!

Testing Evaluation

The number of testing and iteration rounds are highly specific to the nature of your project. An easy way to think about this is to compare the test results to your principles and use cases.

At the end of each round of making and testing, reflect back on this combination of goals and use cases to evaluate what to do next. For example, maybe principle seems to be accomplished by the prototype form, but participants stumbled over what order to fill in the information fields. This indicates the need for a techincal design refinement. Either the team redesigns with a focus on simplifying the form's input order on the participant-facing side of the form, or the team could concentrate on the system-facing side of the form and make the input order more flexible so the system accepts more combinations of information input order than before. After making those changes, the team retests.

Alternatively, maybe the solution doesn't really seem to answer any of the design principles, after all; it's not really solving the problem, even though you thought it would. This is an indication to go back to the ideation stage and rethink the overall concept. It's important to keep in mind that this doesn't mean that the prototyping test was a failure -

understanding why this concept or use case didn't work will greatly inform the next version. If everything works, it's time to move to a higher fidelity. The more you make and test, the fewer problems there will be as we move closer and closer to an effective design.

Test Until There Are No Surprises

By the time you can move to another full iteration, participants should give you no feedback that surprises you and encounter no hesitations or hiccups that derail them from moving through the process. This means that none of the participant questions pertain to the design itself, but only to the process they're using the design for.
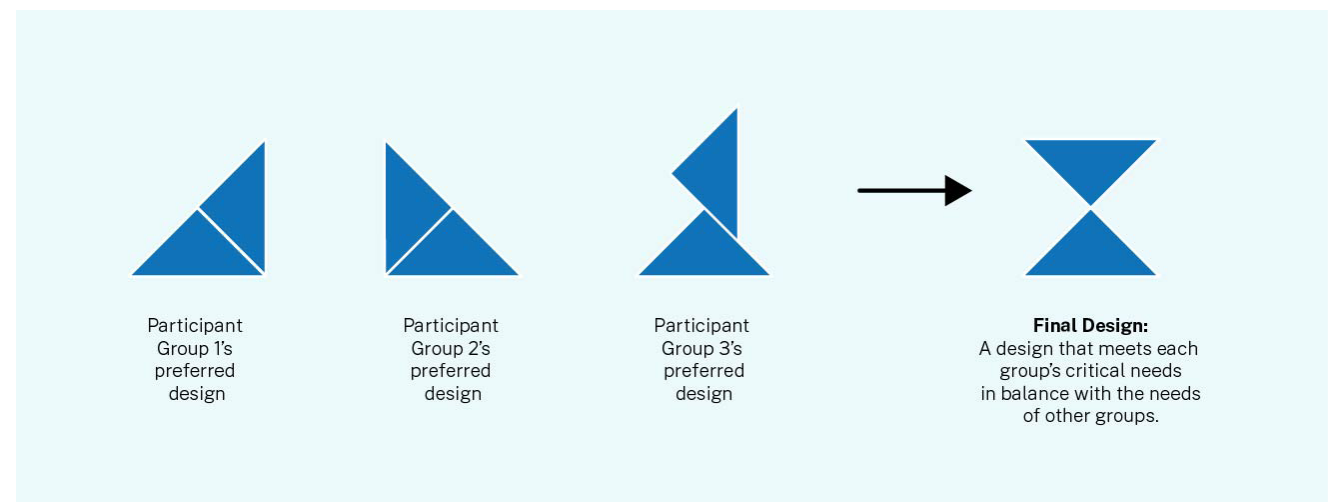
If your design is a form, participants should move through the form fluidly and quickly, then look up at you and ask a question not about the form, but about the next steps in the process. Once your participants are confident they've filled out the form properly to the point that they have no surprises as they move through your design, you know that you can proceed to the next phase of iteration.

Balancing Participant Needs

As testing progresses, you may find that you're getting different, contradictory feedback from partcipants. This is especially true in complicated designs, as the team is tryign to create a product, service, or system that serves multiple groups.

An example of this is when a software has both public-facing participants as well as internal-facing participants. Both

groups have needs that overlap, but they also might have needs that are diverse from or conflict with each other. In this case, the design team must work to balance the participant needs. The final design can neither privledge the public participants to the point that the internal ones can't get what they need from software, nor can it privledge the internal people to the point that the public participants struggle to use the software correctly.

Participant Group 1's preferred design

Participant Group 2's preferred design

Participant Group 3's preferred design

Final Design: A design that meets each group's critical needs in balance with the needs of other groups.

Communicate

At this point in the process, you have a prototype built that can function. This means that all of the prototype's component parts have been tested with participants, changes have been made, then then have been tested as they work in together to create the functioning prototype. What this does not mean is that the prototype is completely finished.

You have created a solution that solves for the participants' needs, but pilot is a time when the prototype will be tested within the context of the systems in which it has to function. For example, if you have designed a form, in this design phase you have:

1. Reviewed your opportunities from discovery research

2. Selected an opportunity to explore

3. Thought divergently in order to generate many ideas to answer that opportunity

4. Thought convergently to map your team and partner skills and create a resources budget

5. Given these constraints, figured out which of your design concepts to forward and create an expression of

6. Thought divergently to think of multiple possible expressions

7. Thought convergently to focus in on the one or two that makes the most sense to work on, given your skills and budget

8. Thought anlytically to take apart those one or two expressions into their component parts

9. Thought divergently to generate multiple different expressions of those parts to test

10. Thought analytically to create tests for participants

11. Re-enacted HCD interviewing techniques to administer tests that enable participants to give you honest feedback

12. Thought divergently to create changes where the participants need changes to be made in your design

13. Re-tested your design with those changes

14. Thought analytically in evaulating your test results to determine if you can continue or need to go backwards in your design

15. If you can go forwards, you've thought convergently about how to refine those designs into new, more advanced iterations

16. Done all the testing, evaulation, changing, and iteration cycles that you have to in order to achieve a functional design expression, aka, working prototype

At this point, it's wise to let your stakeholders know where you are in the process. This is both because you've made a lot of progress since you last spoke substantially to them back in the first communcation round and because you're about to need their help to expand your work into pilot. Use the steps outlined above to create a deck outlining your work. Definitely do include all the process work you've done, including the messy parts. Showing process is a great way to include leadership in the work and to make visible the rigor with which you have approached this development. Don't just show your prototype; show your work.

Prepare to Implement

Through design and testing rounds, you've developed a strong prototype on an individual participant level; participants understand the concept, and the concept's design solves their problem. But, as we launch our designs into a complex world, they not only have to work for the individuals who need them, but they also have to work with the products, services, and systems that will host, lead into, lead out of, support, and wrap around your product, service or system. This complexity is why the authors of this Guide series have encouraged you to always design to the smallest component part that you can. By default, the design will be big, and the impact, positive or negative, will expand beyond the small design itself. In addition, maybe the design still needs to be tested for technical needs like 508 compliance or adherence to union rules. Maybe it needs a professional production designer's touch for layout help or illustrations. Don't worry; you're exactly where you need to be.

Given these needs, it's time to start showing your work to stakeholders. This can seem daunting! Without the deep background on your idea's development, how can anyone understand your work? Without being an explicit participant themselves, how can you accede to their change requests responsibly?

The answer is: with patience, good documentation, and a willingness to absorb their concerns and work through them, you can bring them on board. Take the time to explain to implementation group(s) your initial concept, testing, and revision rounds. Show them where you've landed, but don't expect them to hail you as a genius and accept your design outright. This is a period of socialization, where implementation teams will need to figure out how this design will work for them, as participants in the implementation process. Maybe the work will need to be linked to internal systems, maybe it will need to include a plan to replicate and scale. All this means that your design will change — a bit.

Don't worry! As you've practiced for a long time now, keep your participants needs at the center of your work to ensure you make responsible, minor changes to aid implementation without touching the conceptual or functional core of your design, since it's been tested with participants.

You can also leverage this socialization and planning time to bring your design up to final product level: reach out to that professional production designer to make updates, or to work with your 508 compliance person to bring the design to a finish point as you plan for implementation. In the next Guide in the series, Deliver, we will go through the pilot process, including how to test with the people who are not participants in your design but are certainly ancillary or related to it, whether through their work or their interactions with related systems. In order to mitigate the possbility of your design falling flat in this phase, we recommend that now you step back and present a model for that implementation to the stakeholders in the process. This is not explictly testing your design, but it is seeking to understand how your design will live in the world. As you move through the conversations in this phase of the work, remember: the implementation of your work is almost as important as the development of it. This is launch; this is the exciting part where you share your work with the world. Enjoy it!

Glossary

3 Es

Effectiveness, Ease, and Emotion are the 3 core qualities that VE measures across the enterprise. These are based on a Forrester Research Inc. pyramid model of customer experience.

5 Whys, aka, Laddering

A method by which an interviewer derives additional detail and undercurrents from an interviewee. Typically characterized by the interviewer asking "why" in regards to a qualified or abstract word or phrase used during the an answer to questions. A common metric is for the interviewer to do this five times in a line of question.

Accessibility

The extent to which content is available, understandable, and usable by all audiences, regardless of sensory, physical, cognitive, intellectual, or situational disabilities or impairments.

Best Practice

Procedures or approaches that are accepted or prescribed as being correct or most effective.

Clustering

A research analysis method characterized by the grouping of words or phrases that have a single or set of commonalities. In Design Research, this is often enacted physically by the assembly of words or phrases written on single pieces of paper into a, proximate group.

Concept/Context mapping

An ethnographic research technique, concept/context mapping is a process that tries to understand the environment in which the behavior under study takes place.

Customer Experience (CX)

Customer experience (CX) is the product of an interaction between an organization and a customer. This interaction includes a customer's attraction, awareness, discovery, cultivation, advocacy and purchase and use of a service. It is measured by the individual's experience against the individual's expectations.

Decode

To understand. To analyze in order to find meaning.

Empathy

The action of understanding, being aware of, being sensitive to, and vicariously experiencing the feelings, thoughts, and experience of another through a shared experience.

Ethnographic research

Ethnographic research tries to understand how people live their lives. Unlike traditional research, who ask specific, highly practical questions, ethnographers may visit homes or offices to observe and listen in a non-directed way. While this observational method may appear inefficient, it enlightens us about the context in which customers see their own environment.

'Fail early, fail fast, fail small'

A Design Research principle expressing the ethos that, through quickly making and testing small, unsuccessful solutions to big problems in quick succession, drawing lessons in terms of what works and does not work from those tests and revising the next solution accordingly, more effective and successful end solutions can be reached than if a single large solution was launched once and without testing.

Front Stage / Back Stage

Parts of services that are visible to the service user are called front stage. Part of services not visible to the service user but are interacted with by the service provider are called back stage.

Guided Tour

A research methodology during which a participant shows researcher(s) their physical space, collections, or other assets so that the researcher(s) understand the participant's context and reality through the participant's point of view.

How Might We Question

A "How Might We" (HMW) question serves two purposes. First, it is the frame of inquiry, or the area of research. And second, a HMW question should spur and inspire the research team. A good HMW research question will focus but also leave room for exploration.

Human-Centered Design

Human-centered design (HCD) is a design and management framework that develops solutions to problems by involving the human perspective in all steps of the problem-solving process. Human involvement typically takes place in observing the problem within context, brainstorming, conceptualizing, developing, and implementing the solution.

Ideate

To form an idea of; imagine or conceive. In Design Thinking, this refers to imagining or conceiving of multiple ideas for solutions to problems, usually in succession and building off each idea.

Innovation

A new idea, method, or device. In Design Thinking, usually characterized by a break from traditional or institutionalized methods, production methods, or products .

Intercepts

Intercepts (intercept interviews) are conducted on site with participants while they are interacting with services at the research site.

Internal bias

A universal situation in which humans feel or show inclination or prejudice for or against someone or something. In Design Thinking, the inherency of internal bias is accepted, and we correct for these biases is through awareness and acknowledgment of them.

LEAN (process)

An approach that focuses on people, process and purpose and the alignment between the three.

'No wrong ideas'

In Design Thinking, the principle that, in order to forward innovative thinking, the group or individual performing the thinking session must accept and consider all ideas as possible solutions.

Pain Points

In experience design, pain points are real or perceived problems experienced by customers within a system.

Problem frames

The area of research in regards to a particular problem.

Qualitative research

Primarily exploratory research. It is used to gain an understanding of underlying reasons, opinions, and motivations. It provides insights into the problem or helps to develop ideas or hypotheses for potential quantitative research.

ROI

Acronym for: Return on Investment.

Root cause

The fundamental reason for the occurrence of a problem.

Shadowing

A research methodology during which the researcher follows the participant through the participant's activities. These activities show the researcher the participant's physical context as well as their interaction within that context.

Sensemaking

To make sense of; to understand.

Snapshots

A representative sample of research. In design-oriented presentations, this refers to a collection of photographs, quotations, and synthesized research that is formatted to tell the story of the research endeavor.

Stakeholders

Persons, groups or organizations that have direct or indirect stake in an organization because it can affect or be affected by the organization's actions, objectives and policies.

Sympathy

The action of understanding, being aware of, being sensitive to, and vicariously experiencing the feelings, thoughts, and experience of thorough emotional and intellectual understanding of another's experience. Contrasts with empathy in that it does not include a shared experience.

Synthesis/synthesizing

To combine (a number of things) into a coherent whole. In Design Thinking, this refers to the collection and integration of the substance of data points into a logical and meaningful collection.

Touchpoints

Any point of contact between a customer and a service or service provider. This could be the design of a receipt, the comfort of a waiting room or the usability of a web page.

Yes, And

In Design Thinking, the logical opposition to the statement, "No, But..." Meant to set up acceptance and integration, this form of reply to statements can allow for expansive conversation instead of a negation of opinions and options.