



Medicare Provider Data Service Design Sprint (Summer 2021)

In Summer 2021, we conducted an 8-week design sprint to design a website for providers that included user feedback and testing throughout.

01.
Understand

02.
Ideate

03.
Define

04.
Prototype

05.
Test

06.
Refine



Hello! I'm Annie.

Civic Digital Fellow, UX/UI Design (she/hers)

I recently graduated from Columbia University with a B.A. in Information Science and Art History. I am passionate about designing for underserved users and taking on the hardest problems in our country.

Previously with The Marshall Project, The Metropolitan Museum of Art, The Knight Foundation.

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Civic Digital Fellowship

The Civic Digital Fellowship is the first-of-its-kind data science and technology internship program that allows **innovative students to solve pressing problems in federal agencies**. As part of the Summer 2021 cohort, accepted with a 6% acceptance rate, I engaged with members of the civic tech community through virtual site visits, mentorship, and professional development with organizations like USDS, 18F, and more.

I joined with a passion for using human-centered **design to tackle real problems with public users** and worked as a Design Fellow with the Centers for Medicare and Medicaid Services (CMS).

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The Centers for Medicare and Medicaid Services (CMS):

A **trillion dollar federal agency** within the US Department of Health and Human Services that **administers the Medicare program to 61 million Americans** (19% of the US population), staggeringly **in need of modernization**.

Currently, the system runs on 8 million lines of COBOL and 1.5 million lines of proprietary assembly language on 15 disparate mainframe computers. Its **age, complexity, and criticality of the technology and the healthcare system** itself presents unique and significant challenges.

The goal at large is to create a Medicare claims payment system that is no longer a monolithic black-box system on the mainframe but a **cloud-hosted system** implemented with best-in-class modern software development practices. Critically, this system will be **designed to grow and support new payment models and innovation in policy** such as value-based care to Americans the **healthcare they need to live and thrive**.

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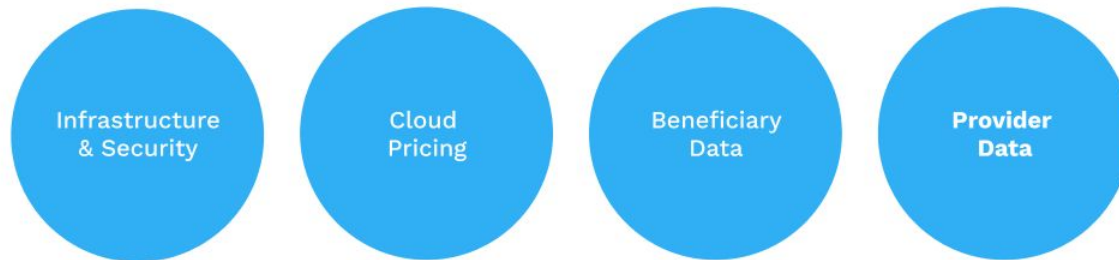
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Medicare Payment System Modernization:

Medicare Payment System Modernization (MPSM) involves 4 key product lines:



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Medicare Payment System Modernization:

Medicare Payment System Modernization (MPSM) involves 4 key product lines:



The **Provider Specific File (PSF)** is a structured, historical dataset used to adjust Medicare's rates for inpatient care.

The **Provider Data Service (PDS)** aims to modernize the PSF as a cloud-based API accessible through a public website.

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The Challenge + the Goal:

The Challenge: The Provider Specific File (PSF) is not readable by users, released on a quarterly lag, requires third parties to access it, and for this reason, error-prone.

The Goal: Design the **UX and UI** for the **Provider Data Service** to provide users with real-time, integrated access to all provider records in the cloud. Enhance **usability, accessibility, responsiveness, and accuracy** of provider-specific data in the Medicare pricing and payment ecosystem.

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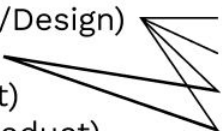
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The Design Sprint:

Team:

- Janie (Product/Design)
 - Annie (Design)
 - Alisha (Product)
 - Tanner (Dev/Product)
 - Rowland (Dev)
- 
- A diagram showing lines connecting team members to tasks. Janie is connected to "Alpha Site, User Research", "Organize the Sprint", and "Set up Mural Boards". Annie is connected to "Organize the Sprint", "Set up Mural Boards", and "Lead and Facilitate sessions". Alisha is connected to "Set up Mural Boards". Tanner and Rowland are connected to "Lead and Facilitate sessions".
- Alpha Site, User Research
 - Organize the Sprint
 - **Set up Mural Boards**
 - **Lead and Facilitate sessions**

Tools:

- Mural, Figma
- Zoom, Slack

References:

- *The Sprint Book*
(Jake Knapp)

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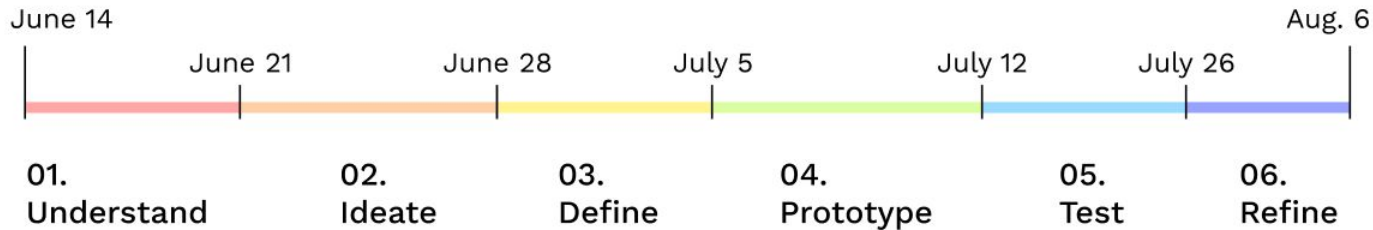
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The Design Sprint:

Timeline: 8 weeks



Understand

In this phase, the team worked to understand the problem landscape and choose a problem using methods like How Might We statements, Subject Matter Expert interviews, Affinity Mapping, and User Journey-Mapping.



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We began by aligning around a long-term goal and asked, “How could we fail?”

Provider Data Service Research

Medicare Administrative Contractors (MACs)



Cycle 1 | October 2018

Provider Data Service Research

Internal Stakeholders & Users



Cycle 2 | March 2021

Provider Data Service Research

Public Users (External)



Cycle 2 | December 3, 2020 (HCD Hours)

Questions:	
Question	Response
Can you describe the API product that you are working on (or have worked on)?	<p>Crystal:</p> <ul style="list-style-type: none"> BODs website - enter website to CPC Initially just a single page with nested links In process of revamping - spoke with users on implementer side <p>WBI:</p> <ul style="list-style-type: none"> College scorecard Really sensitive info about people issues, paired w/ don't have data - mean earnings after you go to a school Presenting aggregated information where specifics were not available Origin: alumni admin wanted to publish its own college rankings (differentiate vs news, etc) - USDS, college scorecard Goal: had real earnings data - distributed through partners but also to desktop app with own site App - primary and website side T&T - developers <p>Sarah Tully:</p> <ul style="list-style-type: none"> DAUG - data analytics strategy group Take claims data, already processed and format into

PDS Personas (End Users)



The Analyst

- Who: Medicare providers (hospital billing, private payers, contractors, CMS, CM, CMMS, CIG)
- Job: Download [public use PDS data](#), [then CMS.gov](#) analyze data for insights, identify trends, urgent costs, identify fraud, design new models



The Customer Service Rep

- Who: MACs, CM
- Job: Field questions from providers on PDS issues, errors, and inquiries; confirm source of info; values of pgs; send screenshots



The Manual Processor (MAC)

- Who: MAC
- Job: Enter PDS updates from Cost Report Settlement and changes from CMS Policymakers at SO's and 1/1



The Policymaker

- Who: CM, CMMS
- Job: Set new PDS rates annually that drive payment (published as [Transmittal](#), [independent Reviewer's](#) coordinate with IT CMS implementation teams; pilot new models for payment

We then reviewed Janie's User Research from earlier cycles, as well as Subject Matter Expert interviews which we conducted earlier in the week.

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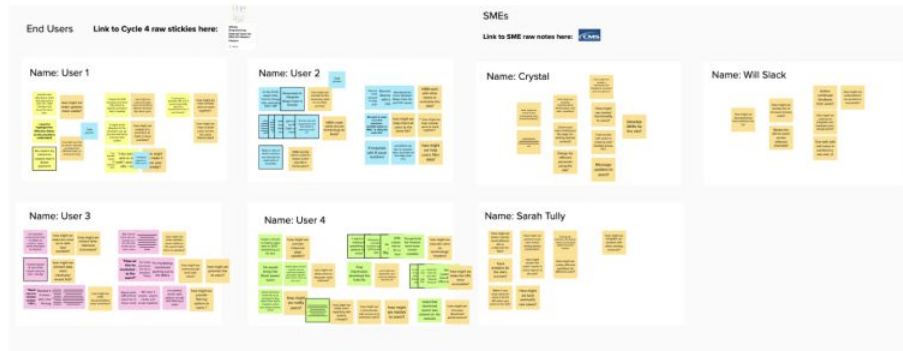
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And synthesized the User Research to identify How Might We (HMW) statements.

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★ HMW design user-friendly documentation to educate users on the data?

★ HMW communicate with and gather continuous feedback from users?

How Might We...



We Affinity Diagrammed the HMW statements to extract the key goals.

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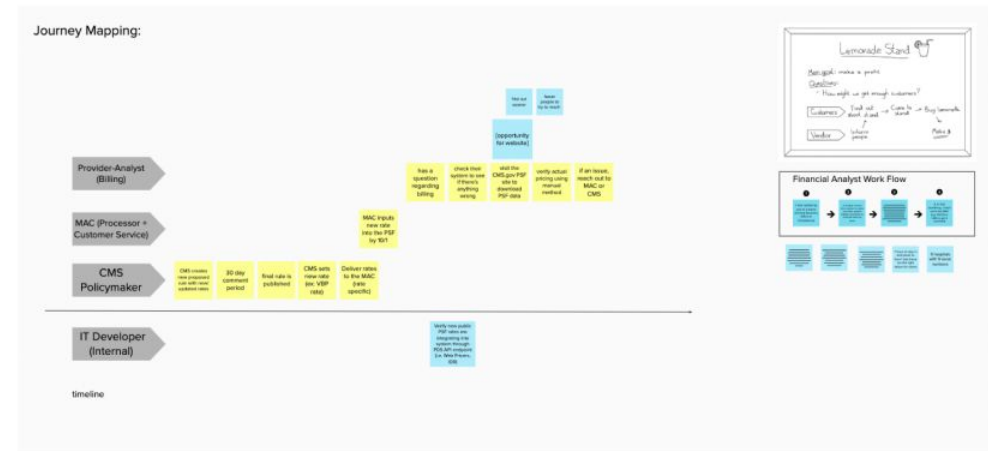
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And mapped the User's Journey.

06. Refine

Ideate

Also known as 'Diverge' phase, the team generated multiple ideas by conducting Competitor Analysis, reloading notes and ideas, and sketching. This phase ended with a large number of ideas (Crazy 8s) and preliminary Solution Sketches.

A horizontal progress bar consisting of two segments: a pink segment on the left and an orange segment on the right. The orange segment is currently active, extending from the start of the bar to the position of the '02. Ideate' step.

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	College Scorecard	CMS Blue Button 2.0	Data at the Point of Care	AB2D	Quality Payment Program
Overview	A standards-based application for comparing Medicare Part A, B, and D plans for over 10 million Medicare beneficiaries.	Enables Prescription Drug Spenders with secure Medicare data to share data for their plan members.	Enables Prescription Drug Spenders with secure Medicare data to share data for their plan members.	Enables Prescription Drug Spenders with secure Medicare data to share data for their plan members.	Enables Prescription Drug Spenders with secure Medicare data to share data for their plan members.
Audience	Search and compare colleges from facts, ratings, costs, job listings, results, and more.	Medicare beneficiaries	Patients	Prescription Drug Spenders	Developers
Features	Home Page - Download the Data what data is included in the dataset last updated download button "Looking for help?" link BackExchange or email... Data Documentation Split into three sections, each described above Change link Data with dropdown including entities Glossary	Home Page - overview, getting started, value and use cases, support Footer: links to other govt agencies/services "Join the Production Pilot" Documentation: sidebar menu Documentation: sidebar menu FAQ Support: google group and mailing list Blog: updates that look like articles Sandbox - documentation, support, test client, log in, sign up	Home Page - overview on individual test with details, verification - API status: online Overview: slightly more in depth Accessing Claims Data: 4 steps Understanding AB2D Data - Support: google group and mailing list - subcategories: About DPH, Sandbox, Production Pilot Log in and Request Access Footer: same as Blue Button	Home Page - overview on individual test with details, verification - API status: online Overview: slightly more in depth Accessing Claims Data: 4 steps Understanding AB2D Data - Support: google group and mailing list - subcategories: About DPH, Sandbox, Production Pilot Log in and Request Access Footer: same as Blue Button	Home Page - overview on individual test with details, verification - API status: online Overview: slightly more in depth Accessing Claims Data: 4 steps Understanding AB2D Data - Support: google group and mailing list - subcategories: About DPH, Sandbox, Production Pilot Log in and Request Access Footer: same as Blue Button
Takeaways	What are they doing well? UI Design is clean, trustworthy (color scheme), without being too sterile Where can they improve? - more segmentation (maybe needs sidebar menu) - UI errors	- Interactive UI - good information hierarchy - great footer - UI error when clicking on "BackExchange" - missing "back to top" button	- eye-catching UI - documentation - eye-catching - visual integration - visual content - distracts from content	- segmenting on each header option isn't coordinated with side menu, simple interactivity - good action items - includes back to top - looks high fidelity / provider's website - perhaps UI is overdesigned - lack of visually / home page is a little messy or just - eye-catching - colors in text values could be bulky heavy - user feedback sign - doesn't look like a website / device is better in tablet - information details, not relevant	- good action items - includes back to top - looks high fidelity / provider's website - perhaps UI is overdesigned - lack of visually / home page is a little messy or just - eye-catching - colors in text values could be bulky heavy - user feedback sign - doesn't look like a website / device is better in tablet - information details, not relevant

I conducted Competitor Analysis to assess the strengths and weaknesses of similar services and pulled out key insights with the team.

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Understand

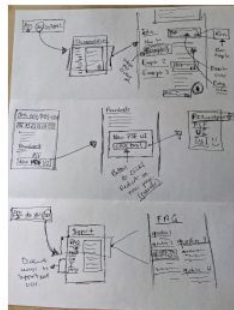
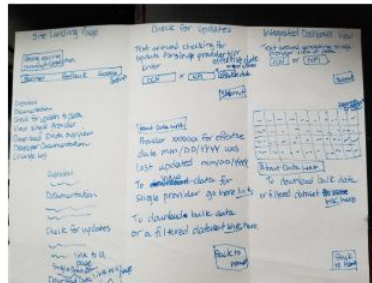
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We began with Crazy 8s - 1 min per sketch, 8 sketches - and then spent 30 minutes on 3 more developed, thoughtful sketches.

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Define

Also known as 'Converge' phase, the team worked together to select the best ideas from the wall. Methods like Dot Voting help to create idea heat maps. These ideas were then translated into a story board where the team defined the user's interaction with the solution.

A horizontal progress bar with three segments: a red segment for the first phase, an orange segment for the second phase, and a yellow segment for the third phase.

01.
Understand

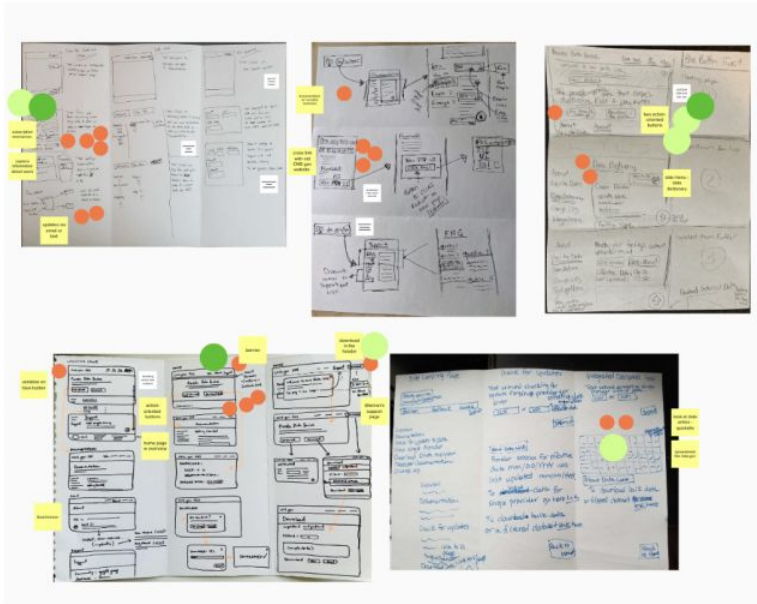
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We shared our sketches in an anonymous Art Museum and dot voted to identify our (4) favorite ideas and (1) favorite solution.

01.
Understand

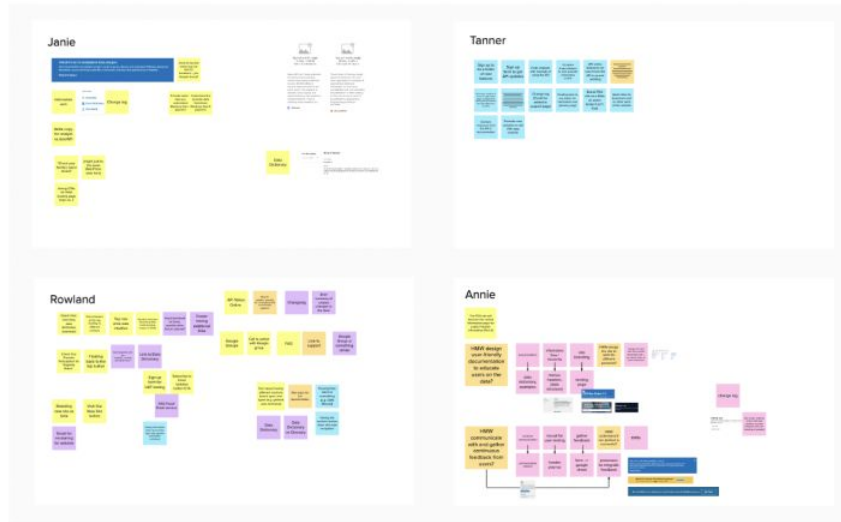
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We refreshed our notes from Phase 01: Understand and sticky noted ideas for sketching.

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The 8 panels in the grid illustrate the following steps in the user journey:

- Panel 1 (User Perspective):** A user attempts to register but receives an error message: "User already exists. Please use a different email address." The user is confused (question mark icon).
- Panel 2 (System Administrator Perspective):** The system administrator adds a new user to the system. The user's email address is entered into the "Email" field.
- Panel 3 (System State):** The system displays a message: "User already exists. Please use a different email address." This message is shown to the user, who is still confused.
- Panel 4 (System Administrator Perspective):** The system administrator adds a new user to the system. The user's email address is entered into the "Email" field.
- Panel 5 (System State):** The system displays a message: "User already exists. Please use a different email address." This message is shown to the user, who is still confused.
- Panel 6 (System Administrator Perspective):** The system administrator adds a new user to the system. The user's email address is entered into the "Email" field.
- Panel 7 (System State):** The system displays a message: "User already exists. Please use a different email address." This message is shown to the user, who is still confused.
- Panel 8 (System Administrator Perspective):** The system administrator adds a new user to the system. The user's email address is entered into the "Email" field.

After we independently identified users' action steps, the team came together to create a Storyboard, complete with words and illustrations.

Prototype

In this phase, we used the chosen ideas and storyboard to create a prototype in Figma, beginning by creating a site map and then the prototype populated with UX Writing and made clickable with interactive components.

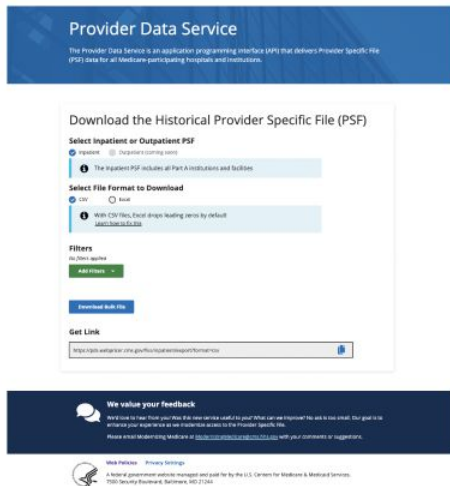




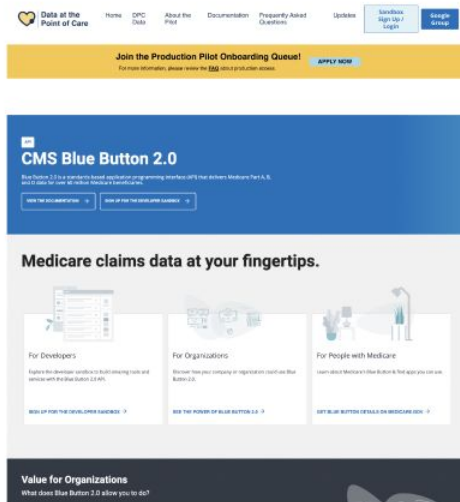
03. Define

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Alpha prototype (from previous design cycles)



I used the Alpha prototype (developed and launched in previous design cycles) as a basis for functionality for the Beta prototype and drew on successful elements identified in Competitor Analysis. I used UX Writing from Janie to populate it with content.

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Beta prototype

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Test

For this phase, we recruited 8 users to test our clickable-prototype. We tested the functionality of the live Alpha site and the visual design and usability of the Beta site. We captured feedback and synthesized it into learnings before returning to the prototype to refine it.



	Randal Roe	Bruce Jan	Joni Nebeker	Nolan Winkler	Jennifer Thao	Ruzanna Kasperova	Kelly Bertley
1. How many times did you use the system?	10	10	10	10	10	10	10
2. How many times did you use the system?	10	10	10	10	10	10	10
3. How many times did you use the system?	10	10	10	10	10	10	10
4. How many times did you use the system?	10	10	10	10	10	10	10
5. How many times did you use the system?	10	10	10	10	10	10	10
6. How many times did you use the system?	10	10	10	10	10	10	10
7. How many times did you use the system?	10	10	10	10	10	10	10
8. How many times did you use the system?	10	10	10	10	10	10	10
9. How many times did you use the system?	10	10	10	10	10	10	10
10. How many times did you use the system?	10	10	10	10	10	10	10



We conducted 8, 30 minute interviews using a script written by Janie. We captured their responses in Mural and conducted Affinity Diagramming with the team to identify common themes.

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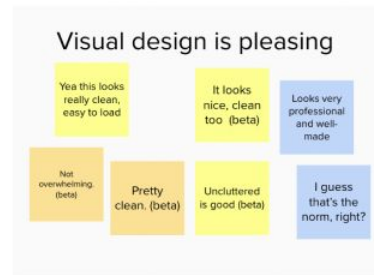
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We heard from users that:

1. The site is intuitive and user-friendly.



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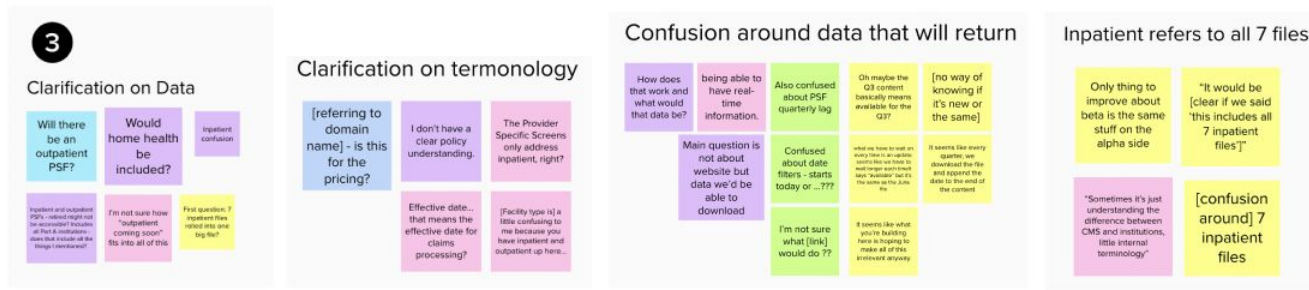
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We heard from users that:

3. The data has been historically - and continues to be - confusing.



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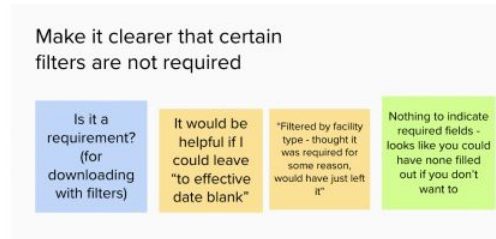
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We heard from users that:

4. They are confused about filters and whether they are required.



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We heard from users that:

5. There is ambiguity around 'Join the Community' and subscribing to updates.



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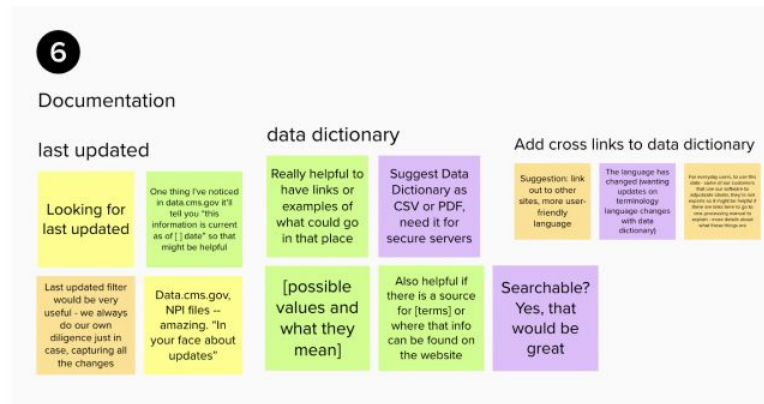
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We heard from users that:

6. There is an opportunity to strengthen documentation.



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In the final phase, we took the insights from User Testing and implemented changes to our prototype. I mocked-up variations, and made final decisions with the team.



Download dictionary: [PDF version](#) [Online Documentation](#)

Developer Docs

Refer to our [Swagger documentation](#) to learn how to consume our REST API. Human-readable documentation for using the Export endpoints is also [available here as PDF](#).

- [GET /Elex/aggregate/request](#)
- [GET /Elex/aggregate/providerdata/{providerid}](#)
- [GET /Elex/aggregate/providerdata/{providerid}/outpatientinstitute](#)
- [GET /Elex/outpatient/request](#)
- [GET /Elex/outpatient/providerdata/{providerid}](#)
- [GET /Elex/outpatient/providerdata/{providerid}/outpatientinstitute](#)

Change Log

08.15.2021 ~1 day ago

Q2 2021 Inpatient PSF data, new outpatient PSF API endpoints, name changes ▼

06.15.2021 ~1 day ago

New alpha website, Excel format, 518ers ▼

FAQs

- What does the inpatient PSF data download include? ▼
- What does the historical provider specific file mean? ▼
- How current is the data that I download? ▼

Download the Data

Get current and historical provider-specific data for all 7 Part A inpatient institutions as well as the outpatient file.

Latest data available
June 30, 2021

Data period
July 6, 2021 | Quarterly

Select Inpatient or Outpatient Provider Specific File (PSF)

☒ Inpatient ☐ Outpatient

The Inpatient PSF includes data for all 7 Part A institutions and facilities: home health agencies (HHA), hospice, acute care inpatient (ACI), inpatient psychiatric facilities (IPF), inpatient rehabilitation facilities (IRF), long-term care hospitals (LTC), and skilled nursing facilities (SNF).

Changes include:

- Stronger documentation via Developer docs, a Change Log, and FAQs
- Added data recency and availability
- Clearer language throughout

01.
Understand

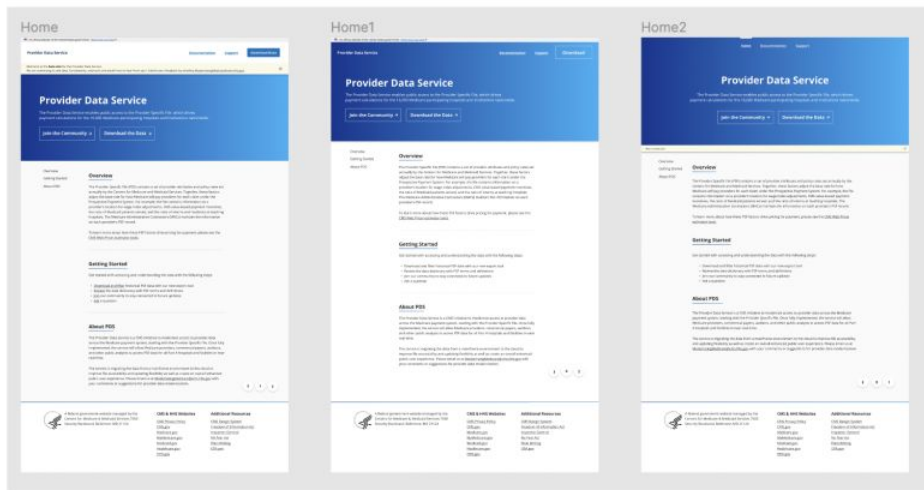
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I mocked-up a couple variations, although we decided to stick with the first design.

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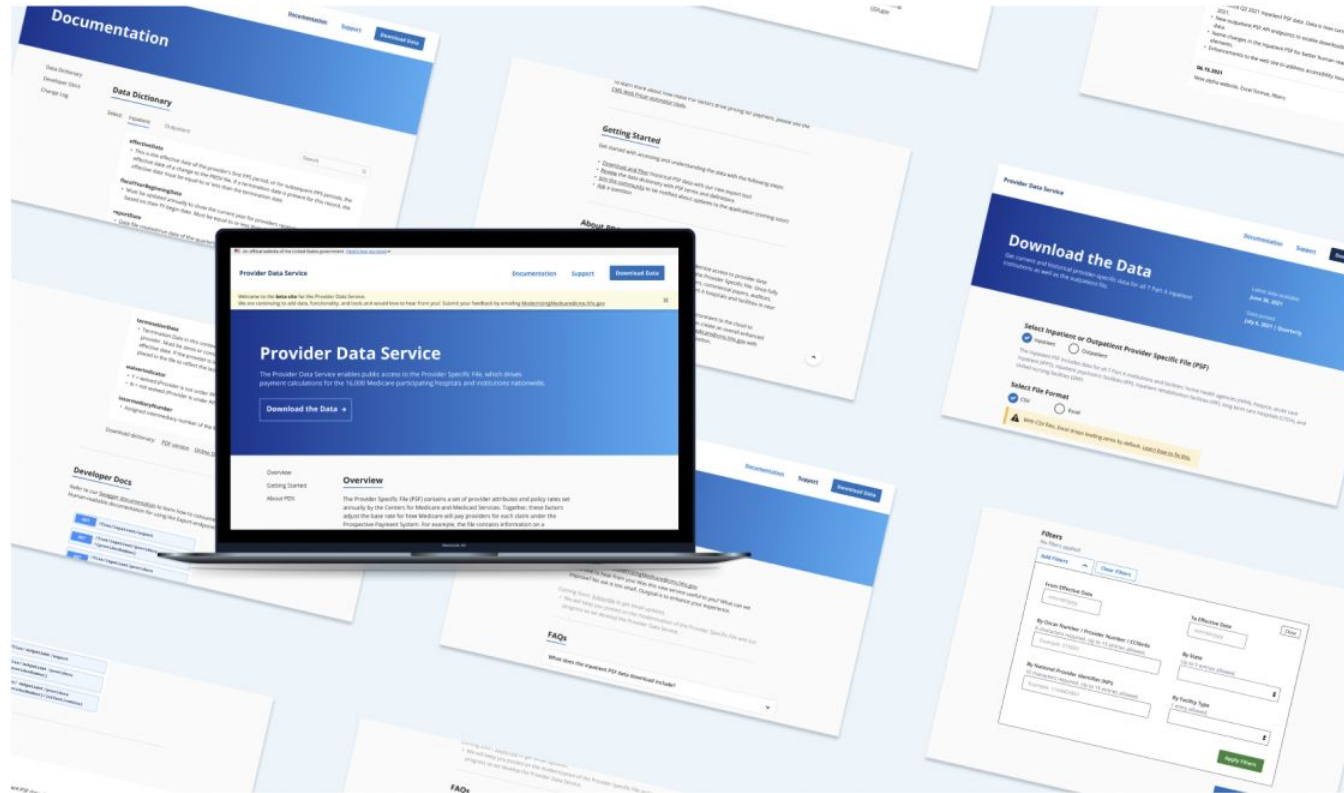
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The Final Product:



Future Steps:

- Implement mechanisms for continued user feedback
- Develop more comprehensive FAQs, Developer Documentation, and Change Log
- Connect the PDS website with the constellation of CMS websites
- Expand Human Centered Design work beyond this sprint

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Learnings:

- 01. Human Centered Design in Government
- 02. Human Centered Design in Practice
- 03. Design Justice

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01. **There is an opportunity to use Human Centered Design to create a government that works better for the people it seeks to serve.**

User Research and User Experience Design use methods such as User Interviews, Journey Mapping, Affinity Diagramming, and Personas, as well as User Testing to **design solutions** that aim to and evaluate success based on how well they **serve the needs of users**.

In this design sprint, we used user feedback as the basis for defining the problem, designing the solution, and testing the design, and developed mechanisms to continue to receive and integrate user insights.

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02. **Human Centered Design in practice requires designers to organize, lead, and facilitate design sprints and teach methodology.**

Design is both a set of skills and a community of practice. To grow a community, designers must be **hired and compensated** for not just the work that uses their **design skill set** but also the **educational work** of teaching design methodology to non-designers. This is essential for **human-centered design to become a part of systems and processes**, as opposed to isolated sprints or workshops.

03. **Design Justice clarifies that Human Centered Design is neither complete nor enough.**

Design justice is a **framework for analysis of how design distributes benefits and burdens between various groups of people**. Design Justice focuses explicitly on **the ways that design reproduces and/or challenges the matrix of domination** (white supremacy, heteropatriarchy, capitalism, ableism, settler colonialism, and other forms of structural inequality). Design justice is also a **growing community of practice** that aims to ensure a more **equitable distribution** of design's benefits and burdens; **meaningful participation** in design decisions; and **recognition of community-based, Indigenous, and diasporic design traditions, knowledge, and practices**.

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DESIGN JUSTICE



COMMUNITY-LED PRACTICES
TO BUILD THE WORLDS WE NEED

SASHA COSTANZA-CHOCK

“This book is about the relationship between design and power.

It’s about the growing community of designers, developers, technologists, scholars, educators, community organizers, and many others who are working to **examine and transform design values, practices, narratives, sites, and pedagogies so that they don’t continue to reinforce interlocking systems of structural inequality...**

Most of all it is an invitation to build a better world.”



Thank you!

Thank you to Coding It Forward and the Centers for Medicare and Medicaid Services (CMS) for the opportunity to work in civic tech.

Thank you to Janie for being an incredible supervisor and teaching me so much about both design and life throughout this summer.

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