

AI & Human-Centered Design (HCD) for Government Agencies

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The Purpose of this Guide

This document is intended to guide designers and developers with building web applications for state and federal government agencies behind their firewall. While best practices for UX in public-facing websites are widely established and supported by numerous resources, designing intuitive and engaging government applications presents unique challenges.

Government applications are often developed to address specific processes, replacing manual workflows with streamlined digital solutions. Defining the functionality of these applications can be challenging, but prioritizing a human-centered design approach is essential to ensuring usability and efficiency. Users should be able to navigate and complete their tasks intuitively and efficiently, without relying heavily on step-by-step instructions. If an application requires extensive training, it may indicate the need to reassess the user experience.

UX designers often collaborate with IT business analysts to translate requirements, business rules, user feedback, and stakeholder goals into effective user interfaces and component selections. While frameworks like Bootstrap provide a strong foundation, they may not always include the necessary functionality, making third-party components a viable option. However, thorough testing is essential to ensure smooth UI integration with existing designs and full compliance with 508 accessibility standards.

Creating government web applications that follow human-centered design principles requires more than just UX and UI expertise. A good understanding of IT business analysis, 508 compliance, and web application development is also valuable. Additionally, with advent of AI, particularly ChatGPT, designers can harness its power to rapidly generate designs and innovative solutions. This guide provides an overview of essential 508 compliance requirements, key IT business analysis steps, and ChatGPT best practices to help you get started.



Figure 1- CDC's Situational Awareness Team reviewing our Red Sky & KMI updates

Government Human-Centered Design (HCD) Challenges

Throughout my career as a web designer and developer, my top priority when creating commercial websites, interactive kiosks, and multimedia presentations has always been to design engaging, user-friendly interfaces that are intuitive and easy to navigate. Typically, multiple UI mockups, often designed in Photoshop, were presented to the client for review. After a few iterations, the final design was approved and then translated into HTML, images and CSS for a more dynamic and responsive experience. Later, I began using Balsamiq Mockups to create wireframes, which were then transformed into functional HTML prototypes. This design process proved effective in both the private sector and across multiple state government agencies.



Figure 2 – CDC's Emergency Operations Center

In 2010, I secured my first federal government contract through Lockheed Martin, working with the Centers for Disease Control and Prevention (CDC) to develop a suite of software applications for the Emergency Operations Center (EOC) at the agency's Edward R. Roybal campus in Atlanta, Georgia. When a public health event emerges, the CDC gathers and analyzes critical data to assess the severity and potential impact of the situation. Based on this evaluation, officials determine whether deploying personnel and resources is necessary to provide support and an effective response.

To support the decision-making process, Subject Matter Experts (SMEs) are brought into the CDC's Emergency Operations Center (EOC), located on the third floor of Building 21. Here, they utilize these applications to recruit, coordinate, and manage critical resources, ensuring an organized and efficient response to the event. By streamlining communication and resource allocation, these tools help SMEs facilitate a timely and effective public health response.

The challenge was onboarding new users quickly and efficiently with these custom EOC applications. I advocated for a consistent interface across applications to improve usability. While UX as a discipline had been gaining traction for several years, it was still relatively unknown, especially in government software development, where the focus remained on web application functionality rather than user experience.

Since these applications were designed for a small group of users operating behind the federal firewall, the emphasis was placed on training rather than intuitive design.

I convinced the Lockheed Martin Program Manager that incorporating UI consistency was essential for helping users get up to speed quickly. However, at the time, most Program and Project Managers

didn't see the need to include a UX designer on their teams, relying instead on developers to create the user interface, often resulting in minimal and inconsistent user interfaces.

Meanwhile, IT Business Analysts focused primarily on gathering requirements and integrating business rules, with little to no effort spent on engaging users for feedback on their experience. To improve the development process, the team adopted an Agile methodology, working in two-week Sprints with daily Scrum meetings. Every two weeks, applications were demoed to stakeholders, allowing them to review and approve not just the required functionality but also UI refinements, ensuring a more user-friendly experience. We had an amazing team and after the launch of new EOC applications, we received the CDC Award of Excellence.

While the private sector quickly embraced UX principles as a core part of the web development process, government adoption lagged behind. Federal agencies, in particular, have historically been slow to implement new technologies due to financial constraints, bureaucratic processes, and security concerns. Tools like Figma and other cloud-based design software are often classified as security risks and prohibited on federal servers.

The screenshot displays a web application interface for 'RECORDS MANAGEMENT'. The top navigation bar includes a logo, the title 'RECORDS MANAGEMENT', a user greeting 'Hello, VHA07/VHAATGDocu01', and search functionality. A left sidebar contains a 'Main Menu' with links like 'All Entries', 'My File Plan', 'Add a New Entry', 'Favorites', 'Subscriptions', and 'Saved Searches', followed by a 'Resources' section with links to 'Records Control Schedules', 'User Guide', 'Training Videos', 'Best Practices', 'Quick Reference', and 'VA Form 7458'. The main content area is titled 'New Entry' and features a 'General' tab. This tab contains several form fields: 'Title', 'Location', 'Description', 'Keywords', 'Restrictions', 'Record Size' (with radio buttons for 'Single Record' and 'Record Series (default)'), 'Category', 'Record Type', 'Record Media', 'Volume', 'Arrangement', 'Inclusion Start Date', 'Inclusion End Date', 'Information Type', and 'Cut Off'. On the right side of the form, there are sections for 'Records Control Schedule Information' (with 'RCS Schedule & Entry' and 'RCS Description' fields), 'Disposition Alert(s)' (with a table for 'Disposition Date', 'Alert settings', and 'Remarks'), and 'Records Contacts' (with fields for 'Records Liaison', 'Records Liaison - Alternate', 'Records Manager', 'Records Manager - Alternate', and 'Organization'). Each of these right-side sections includes a '+ Add' button. At the top right of the form area, there are 'Clear form', 'Cancel', and 'Save' buttons.

Figure 3 - VA Bootstrap Web Application (Bootstrap Framework)

Additionally, many stakeholders held the mindset of "we'll just train them to use it," often overlooking how incorporating UX practices could streamline applications, and create more intuitive, engaging user interfaces. Since most internal government web application development is outsourced to contractors, and agencies typically serve a limited user base, the focus has traditionally been on training users rather than prioritizing UX. This thought process has been consistent with other contracts I have had with the Veteran's Administration (VA), National Institutes of Health (NIH) and Electronic Research Administration (eRA).

The Federal Government provides GFE (Government Furnished Equipment) laptops for contractors however only agency approved software can be installed. Additionally, connecting a personally owned laptop to a government network is prohibited by security policies. To navigate these challenges, I often had to use my personal laptop to create mockups and share designs with the team. While I couldn't connect my device to their networks, projectors were available for meetings to showcase designs and gather stakeholder feedback.

However, this mindset has begun to evolve, leading to significant advancements in UI design for government web applications. One of the most transformative developments came with the release of Bootstrap in 2011, a free and open-source front-end framework that revolutionized the way government websites were built. Bootstrap's responsive grid system, pre-built components, and reusable CSS classes provided a structured, visually appealing foundation that required minimal customization. This not only improved design consistency but also streamlined development, reducing the time and effort needed to create accessible, user-friendly interfaces. When UI

modifications were necessary, developers could quickly implement custom CSS, ensuring flexibility while maintaining a cohesive look and feel.

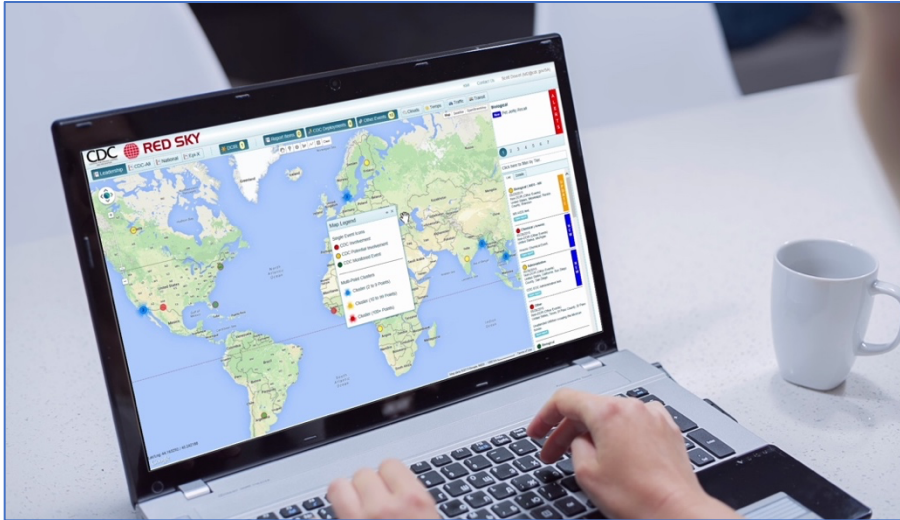


Figure 4 - CDC's Red Sky

As a result, the standard Bootstrap grid layout, featuring a top navigation menu, banner, main content area, and footer, became widely adopted across government web applications.

Recognizing the importance of HCD, the CDC awarded a \$1.7 billion Data Modernization Accelerator (DMAC) contract in 2023 to enhance public health data infrastructure by modernizing data systems, communication with the

public and health facilities, improving interoperability, and ensuring timely, accurate data sharing to support emergency response and decision-making.

One of the most groundbreaking innovations in recent years is the rapid advancement and widespread adoption of artificial intelligence, with ChatGPT at the forefront. Developed by OpenAI, ChatGPT is a cutting-edge AI language model capable of generating remarkably human-like text, answering complex questions, assisting with writing, producing code, and offering insightful analysis across a wide range of topics. Powered by deep learning and trained on vast datasets, it understands and generates natural language with remarkable fluency, making it an invaluable tool for content creation, ideation, and problem-solving. Whether used for software development, research, or enhancing user experiences, ChatGPT is revolutionizing the way individuals and businesses interact with technology, including HCD.

One of the keys of using ChatGPT effectively, is understanding how to use prompts. ChatGPT prompts are the inputs or questions users provide to guide the AI in generating responses. A well-crafted prompt helps ensure accurate, relevant, and high-quality output. Prompts can be simple or complex, ranging from open-ended questions to detailed instructions specifying format, tone, or style.

As new frameworks emerge and gain widespread adoption alongside advancements in AI, maintaining a strong focus on HCD within an Agile environment is crucial to ensuring that digital solutions remain intuitive, efficient, and user-friendly. By continuously integrating HCD principles into Agile workflows, government agencies can develop adaptive and responsive systems that align with employees' real-world needs, improving productivity and overall user experience.

User Experience (UX) vs Human-Centered Design (HCD)

User Experience (UX) – Business-Driven Design for the Private Sector

UX is primarily associated with the private sector because its core objective is to create seamless, enjoyable, and efficient user interactions that drive business success. Private companies invest in UX to enhance customer satisfaction, improve brand loyalty, and maximize conversions, whether including increasing sales, more app downloads, or customer retention.

Key Private Sector UX Priorities:

- **Revenue and Conversion Optimization:** UX improvements directly impact key business metrics like sales, sign-ups, and retention.
- **Customer-Centric Design:** While UX considers user needs, it is often tailored to target market segments that drive profitability.
- **Competitive Advantage:** Companies compete by offering superior user experiences, pushing for innovation in ease of use, personalization, and efficiency.
- **Aesthetic and Brand Identity:** UX often aligns with branding strategies, focusing on making interfaces visually appealing and emotionally engaging.
- **Speed and Convenience:** Private companies prioritize fast and intuitive interactions to reduce friction and enhance customer satisfaction.

Human-Centered Design (HCD) – Functionality-Oriented and Problem-Solving for Government

HCD is more aligned with government and public sector projects because its primary goal is to create solutions that serve the broadest range of users, especially marginalized or underserved populations. Unlike UX, which often caters to a business's target audience, HCD emphasizes accessibility, inclusivity, and social impact, ensuring that services are equitable and effective for all.

Key Government HCD Priorities:

- **Access for All Users (both inside the Government firewall and public-facing websites):** Government services must be designed for people of all ages, abilities, income levels, and digital literacy levels.
- **Problem-Solving Over Profit:** Unlike the private sector, which focuses on business KPIs, government applications prioritize solving real-world challenges such as healthcare access, social services, and public safety.
- **Regulatory and Compliance Considerations:** HCD ensures compliance with laws like ADA (Americans with Disabilities Act) and Section 508 (digital accessibility).
- **Stakeholder Engagement:** HCD relies on direct input from citizens, policymakers, and service providers to refine solutions based on real user feedback.
- **Sustainability Over Market Competition:** Government projects aim for long-term usability and effectiveness rather than rapid iterations based on market trends.
- **Focus on Functionality:** Applications are component heavy to meet the functionality requirements.

The Fundamental Difference: Business Goals vs. Public Service

While UX and HCD share similarities, the key difference lies in who they serve and what drives design decisions:

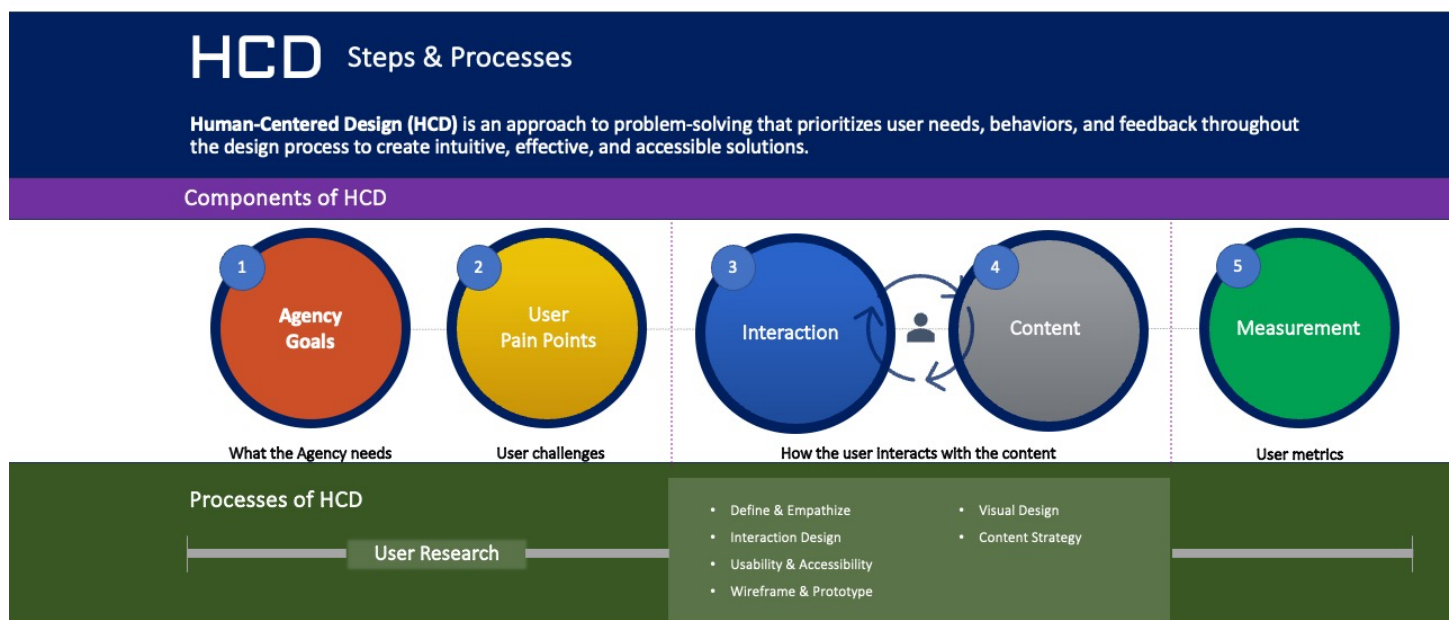
- **UX is business-driven**, optimizing user experiences to achieve company goals like higher engagement and revenue.
- **HCD is service-driven**, ensuring that government services are functional, accessible, and designed to provide the best human-centered experience.

UX thrives in environments where competition and consumer preference dictate success, while HCD plays a crucial role in designing accessible, intuitive, and impactful services and provide the resources to help government employees to fulfill their agency's mission.

UI/UX Approach for Government Agency Application Design

Most government applications are designed either to convert a manual process into a digital one or to enhance an existing workflow. The key to effective government UI/UX design is recognizing that these applications are largely **component-focused**, built to deliver essential functionality. A strong understanding of common web components is crucial to designing effective government applications.

HDC Overview



HCD Steps for Creating Government Web Applications

Human-Centered Design (HCD) is an approach to problem-solving that prioritizes the needs, behaviors, and experiences of users. It ensures that products, services, and systems are designed **with and for the people** who will use them, leading to more intuitive, efficient, and impactful solutions.

The process typically follows these key steps:

1. Research & Discovery

- Understand the problem: Define the purpose and objectives of the web application.
- User research: Conduct interviews, surveys, and focus groups with government employees, and stakeholders.
- Stakeholder engagement: Involve policymakers, IT teams, and accessibility experts to gather input.
- Benchmarking & competitive analysis: Analyze similar government services and best practices.

2. Define & Empathize

- User personas: Create profiles representing different user groups (e.g., individuals with disabilities, government staff).
- User journeys & pain points: Map out how government employees interact with manual procedures and applications, and identify barriers.
- Accessibility considerations: Ensure compliance with ADA, Section 508, and WCAG (Web Content Accessibility Guidelines).

3. Ideation & Concept Development

- Brainstorm solutions: Generate ideas based on research findings.
- Wireframing & low-fidelity prototyping: Sketch basic layouts and workflows before full design.
- Stakeholder collaboration: Validate concepts with government teams and potential users.

4. Prototyping & Design

- High-fidelity prototyping: Develop interactive mockups using UX/UI design tools.
- User testing on prototypes: Gather feedback from real users before development.
- Iterative design refinements: Make adjustments based on feedback before coding begins.

5. Development & Implementation

- Agile or iterative development: Build in phases to allow continuous testing and improvements.
- Integration of third-party services and API's.
- Security & compliance checks: Ensure data privacy and cybersecurity measures meet government regulations.

6. Usability Testing & Refinement

- Beta testing with end users: Conduct usability testing sessions with real users to identify issues.
- A/B testing & performance analysis: Compare different design versions for effectiveness.
- Bug fixes & accessibility audits: Resolve issues before the official launch.

7. Launch & Deployment

- Soft launch for select users: Gather final feedback before full internal release.

- Application launch with support resources: Provide user guides, Computer Based Training Videos (CBTs), FAQs, and customer support.
- Ongoing monitoring & feedback collection: Track performance, usage, and government employee feedback.

8. Continuous Improvement & Maintenance

- Regular updates & enhancements: Implement new features based on evolving user needs.
- Security & accessibility audits: Ensure ongoing compliance with government regulations.
- Data-driven iterations: Use analytics to refine and improve the application over time.

Why These Steps Matter in Government Web Applications:

- **Ensures accessibility & compliance** – Meeting Federal legal requirements for accessibility.
- **Enhances efficiency** – Reducing government workload through intuitive digital services.
- **Encourages employee engagement** – Design an HCD-driven experience that enables government employees to efficiently use web applications and complete their tasks with ease.

HCD Overview



Human-Centered Design & 508 Compliance

User experience (UX) design is more than just crafting visually appealing interfaces, it's about creating seamless, intuitive, and accessible experiences that cater to all users. In today's digital landscape, creating applications that is accessible to everyone isn't optional; it's a responsibility and a Federal law. That's why incorporating 508 compliance standards from the very beginning of the design process is crucial. In previous projects, 508 Compliance was often overlooked until the final stages of Quality Assurance testing. As a result, significant design revisions were frequently required, consuming valuable development time.

508 compliance, rooted in the Rehabilitation Act of 1973, ensures that digital content is accessible to individuals with disabilities, including those who rely on assistive technologies like screen readers or keyboard navigation. By integrating these standards early on, UX design doesn't just meet regulatory requirements, it promotes usability for everyone. Designing with accessibility in mind enhances usability across the board, improves user satisfaction, and expands the reach of digital products.

UX design for web applications in an Agile environment requires a user-centered approach that integrates 508 compliance from the start. By incorporating accessibility best practices into each sprint, teams can iteratively improve usability while ensuring compliance with WCAG guidelines. Regular user testing, including feedback from individuals with disabilities, helps refine UI elements, ensuring seamless keyboard navigation, screen reader compatibility, and proper color contrast. Agile's incremental development allows for continuous accessibility enhancements, preventing costly retrofits later. Leveraging Bootstrap, HCD, 508 best practices, and automated accessibility testing tools, UX designers can create intuitive, compliant, and scalable applications that provide an engaging experience for all users.



Figure 5 - National Institute of Environmental Health Sciences (NIEHS), Durham, NC

HCD & 508 Compliance Best Practices

HCD focuses on creating intuitive, user-friendly experiences by understanding the needs, behaviors, and pain points of government employees.

- **User Research & Engagement:** Conduct interviews, surveys, and usability tests with employees to understand their workflows and challenges.
- **Iterative Prototyping:** Use wireframes and prototypes to gather feedback early and refine solutions before full implementation.
- **Task-Centered Design:** Prioritize simplicity and efficiency, ensuring users can complete their tasks intuitively.
- **Consistent UI Components and Labels:** Utilize standardized design elements and familiar interaction patterns to reduce cognitive load. For example, if a print button is used on multiple pages, it should be displayed in the same location, same button styling, and labeled identically.
- **Consistent Page Layout:** Menus, banners, agency logos, body text, components like data tables and footers are presented the same for each page.
- **Performance Optimization:** Ensure the application is fast and responsive, even on government-issued devices with limited processing power.
- **Feedback:** Use “proof of life” gifs and other graphics when the system is processing data or performing searches to let users know the application is still working.
- **Use Agency Branding:** Most Government agencies have branding requirements including colors, typography, logo placement, etc., that should be incorporated into the application UI.

508 Compatibility Overview

If you are creating UI with Government Agencies, it's absolutely imperative you understand 508 Compliance essentials. I am HHS 508 Trusted Tester Certified; however, anyone can use the tools listed in this guide to quickly and easily test for compliance. Government web applications are focused on providing the necessary functionality to allow users to complete their tasks. The official guide can be found here: [Guide to Accessible Web Design and Development](#). However, I will outline the most common 508 compliance issues to keep in mind.

ARIA (Accessible Rich Internet Applications) & Assistive Tech Support - ARIA attributes are required for users who rely on Assistive Technology. ARIA attributes communicate critical information about elements, such as their roles, states, and properties, to screen readers. For example, `role="button"` informs the AT that an element behaves like a button, even if it's styled as something else. In addition, ARIA attributes like `aria-disabled`, `aria-checked`, or `aria-selected` inform users about the current state of interactive components, reducing confusion and improving usability.

Use Semantic HTML – Utilize proper heading structures (`<h1>`, `<h2>`, etc.), lists, and landmarks (`<nav>`, `<main>`, `<footer>`) to improve navigation for assistive technologies.

Avoid Automatic Content Changes – Do not use auto-playing media, unexpected page refreshes, or time-limited interactions unless a user can pause, stop, or extend them.

Provide Captions and Transcripts – Videos should include captions, and audio content should have a transcript for users with hearing impairments.

Color & Contrast - Not have proper contrast seems to be the most common 508 issue with web applications and is easily tested using Color Contrast Analyzer. Text and images of text must have a contrast ratio of at least 4.5:1 to ensure readability. Large typography should have a contrast ratio of at least 3:1. I always design for full compatibility using 4:5:1. Logos do not have a contrast ratio requirement. Incidental graphics that are decoration and do not provide any relevant significance do not apply as well, but are rarely used in Government designs.

Accessible Forms - Forms are often incorporated in Government web applications to data input. It is important that any instructions for data input are clearly displayed at the top of the form. All form elements, including text fields, radio buttons, and dropdowns, should be clearly labeled, and any required fields should be clearly marked for the user.

Use <label> for All Inputs: Associate form elements with their corresponding labels using for="id". As each form element receives focus, it should be visually highlighted to clearly indicate that it is active. If any input error is detected, the error should be identified and described to the user. Do not only use color to indicate an error, such as a red outline around the field. The error should be displayed along with recommendations to fix the problem.

All form elements should follow a logical sequence, starting from the upper left corner, moving across each row, and ending with the bottom right form element.

Preventing errors is crucial when entering data with legal or financial data. For web forms that involve legal agreements, financial transactions, changes to user data, or submission of test responses, at least one of the following must be incorporated to prevent errors:

- Reversible: Users can undo submissions.
- Checked: The system checks for input errors and allows users to fix them.
- Confirmed: Users can review, confirm, and correct their information before completing the submission.

As outlined in the Federal 508 Accessibility Guide, no unexpected or unusual events should occur when users move focus from one form element to another, such as opening a modal or submitting the form. This guideline applies to all parts of the web application, any event should be clearly labeled and predictable.

Headings & Labels - Headings and labels should clearly describe the topic or purpose. Start with the largest heading, such as H1 or H2, at the top of the page and use smaller headings like H3, H4 or H5 as you move further down the page.

Images - Images that are a meaningful graphic within the content (rather than purely decorative), an alt equivalent description must be provided for assistive technologies (AT). Ensure all images, icons, and multimedia have descriptive alt text or captions for screen reader accessibility. To determine the description, consider: "What text would replace this image?". Text Alternatives for Complex Graphics: Use <figure> and <figcaption> for context or detailed descriptions.

Ensure Keyboard Accessibility – All interactive elements (buttons, forms, links) should be operable via keyboard (Tab, Enter, Space, Arrow keys) without requiring a mouse. All elements should have a visible outline or another clear visual indicator to show when they are in focus. All web page elements

should be able to be navigated in order and the proper sequence and focusable elements should receive focus in a way that maintains both meaning and functionality.

Links & Buttons - Links and buttons should have clear, descriptive labels to help users understand where the link will lead or what action will be performed when selected. Always use CSS to change the color of the link or button and change the cursor to a pointer (hand) for the mouseover event.

Multiple Ways - There should be more than one way to navigate between web pages unless the web page is a result or a step in a process. Examples of multiple ways include a top menu, text footer navigation menu, site map or a search field.

Page Titles - Each web page should have a clear and descriptive title that accurately represents its content. Titles can be generated dynamically but must be tested for accuracy.

Sensory Characteristics - Any instruction provided to understand and operate content should not solely rely on sensory characteristics of components such as shape, size, color, location or sound. For example, avoid using language such as “click on the red button” instead, state “click on the Open Modal button”.

Tables - There are two types of Tables, Data Tables and Layout Tables. Data Tables are dynamic and are used to organize and display structured data in rows and columns. Layout Tables are used for visual layout purposes, not to display structured data. Its important tables are coded correctly for accessibility. For example, Layout Tables should use the ARIA attributes `role="presentation"` or `aria-hidden="true"` to ensure assistive technologies ignore the table structure.

Test with Assistive Technologies – Regularly evaluate your application using screen readers (NVDA, JAWS, VoiceOver), keyboard navigation, and accessibility testing tools like ANDI, Color Contrast Analyzer or WAVE.

Third-Party Components & Libraries

In some cases, implementing the required functionality in a project may necessitate the use of a third-party software component. These components, whether open-source, commercial, or proprietary, can provide robust and time-saving solutions for various needs, such as data processing, or API integrations. However, while third-party solutions often deliver the desired functionality, they may introduce 508 compliance issues, particularly when using free or public-domain software.

It is crucial to thoroughly evaluate these components before integration or purchase to identify potential accessibility issues early in the process. Many third-party tools may lack support for screen readers, keyboard navigation, and other critical accessibility features. Verifying that third-party components meet both functional requirements and accessibility standards is essential for developing digital experiences that are both user-friendly and legally compliant.

ChatGPT & UI / UX Design

Utilizing AI tools like ChatGPT for UX design accelerates the development of Bootstrap-based web pages, enabling the quick creation of essential components such as forms, modals, navigation bars, and responsive layouts.



By providing clear prompts, designers and developers can quickly generate HTML, CSS, and JavaScript code that adheres to Bootstrap's grid system and component structure. This significantly reduces development time and ensures consistency across the interface. Additionally, ChatGPT can assist in refining CSS styling, offering custom themes, color schemes, and typography recommendations that align with branding guidelines. Whether it's fine-tuning the spacing, animations, or interactive elements, ChatGPT accelerates prototyping and helps UX designers iterate faster with functional UI components.

Beyond design and development, ChatGPT plays a crucial role in content creation, ensuring that both the website copy and supporting documentation are clear, engaging, and user-friendly. For web applications, ChatGPT can craft concise microcopy for buttons, tooltips, and error messages that enhance usability. It also assists in writing product descriptions, onboarding instructions, and FAQs, making the user experience more intuitive. Additionally, ChatGPT can generate comprehensive documentation, including user manuals, helping teams maintain consistency and usability across projects. By integrating ChatGPT into the UX workflow, designers and developers can create polished, user-centric experiences with greater efficiency.

For example, copy and paste this into a ChatGPT prompt:

Create a bootstrap 5 form in 3 columns and a clear (button outline) and submit button with the following fields with the label (bold) on top of the field left justified and a lighter color label in the field itself, name text field, position text field, organization, text field, office text field, start date, date picker, email text field, select dropdown with the options being option 1, option 2, option 3, radio selector with 4 options, check box with 3 options. Make the name, email and organization text field required with an asterisk in the label.

The HTML/CSS code will be generated in about 30 seconds and looks like this when rendered in a browser:

Name * <input type="text" value="Enter your name"/>	Position <input type="text" value="Enter position"/>	Organization * <input type="text" value="Enter organization"/>
Office <input type="text" value="Enter office"/>	Start Date <input type="text" value="mm/dd/yyyy"/> 	Email * <input type="text" value="Enter email"/>
Select Option <div>Choose an option </div>	Radio Options <div><input type="radio"/> Option 1 <input type="radio"/> Option 2 <input type="radio"/> Option 3 <input type="radio"/> Option 4</div>	Checkbox Options <div><input type="checkbox"/> Option 1 <input type="checkbox"/> Option 2 <input type="checkbox"/> Option 3</div>
<div><input type="button" value="Clear"/> <input type="button" value="Submit"/></div>		

Using ChatGPT for Web Prototyping: Best Practices and Recommendations

Leveraging ChatGPT for web prototyping can streamline the design and development process, enhance creativity, and save time. Here are a few ways to use ChatGPT prompts to get more targeted results.

Types of ChatGPT Prompts:

- **Open-Ended:** Encourages broad responses (e.g., *"Explain the benefits of AI in business."*).
- **Instruction-Based:** Directs specific tasks (e.g., *"Write a professional email about a project update."*).
- **Comparative:** Requests a comparison (e.g., *"Compare Agile and Waterfall methodologies."*).
- **Role-Based:** Assigns a perspective (e.g., *"Act as a marketing expert and write a campaign strategy."*).
- **Formatting-Specific:** Defines structure (e.g., *"Summarize this article in bullet points."*).

The more precise and detailed the prompt, the better the AI can tailor responses to meet user needs. Here are key recommendations on how to integrate ChatGPT effectively into your web prototyping workflow:

1. Ideation and Concept Development

- Generate website layout ideas based on user needs and industry trends.
- Brainstorm UX/UI design elements for different types of users.
- Create detailed user personas and customer journey maps.

Example Prompt:

"Generate five different landing page concepts for an eco-friendly e-commerce website, including key sections and call-to-action placements."

2. Wireframing and Low-Fidelity Mockups

- Describe page layouts with structured component suggestions (e.g., hero section, navigation, forms).
- Generate HTML & CSS wireframes for quick visualization.
- Suggest best UI/UX practices for accessibility and responsiveness.

Example Prompt:

"Provide a simple HTML/CSS wireframe for a minimalist blog homepage with a header, featured article section, and sidebar."

3. Content Generation and Structuring

- Draft placeholder text for landing pages, product pages, and blogs.
- Optimize microcopy for buttons, navigation labels, and form fields.
- Suggest SEO-friendly headings and metadata structures.

Example Prompt:

"Write a compelling homepage tagline and hero section copy for a fintech startup that simplifies small business accounting."

4. Interactive Prototyping with Code Generation

- Generate JavaScript and React components for dynamic interactions.
- Suggest API integrations for real-time data visualization.
- Provide CSS animations and effects to enhance UI appeal.

Example Prompt:

"Create a React component for a dynamic pricing calculator with user input fields and a live result display."

5. Testing and User Feedback Simulation

- Generate usability test questions for early-stage user feedback.
- Simulate user interactions and possible challenges.
- Suggest accessibility improvements based on WCAG guidelines.

Example Prompt:

"List 10 usability test questions for evaluating the user-friendliness of a new SaaS dashboard."

6. Iteration and Refinement

- Summarize user feedback and suggest design refinements.
- Provide alternative layout recommendations based on A/B testing.
- Generate step-by-step tutorials for implementing UI updates.

Example Prompt:

"Based on this feedback summary, suggest three design improvements for better mobile navigation."

7. Exporting and Collaboration

- Generate Markdown summaries for easy sharing with stakeholders.
- Suggest tools for converting wireframes into high-fidelity designs (e.g., Figma, Balsamiq).
- Provide structured documentation for developers.

Example Prompt:

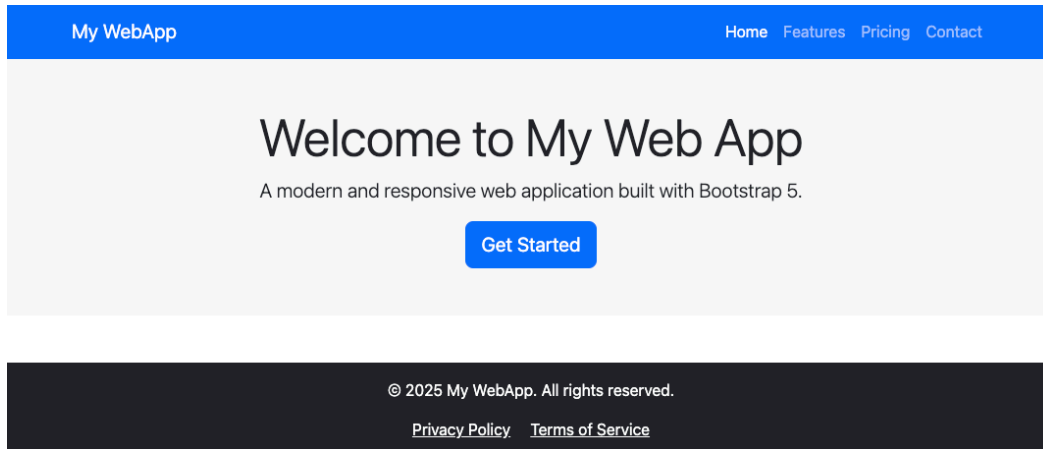
"Generate a detailed design specification for a mobile-first booking app, including key features and UI/UX guidelines."

ChatGPT Prompts for generating Bootstrap-based Prototypes

1. Basic Bootstrap App Structure

"Generate the basic HTML structure for a Bootstrap 5 web application with a responsive navbar, hero section, and footer."

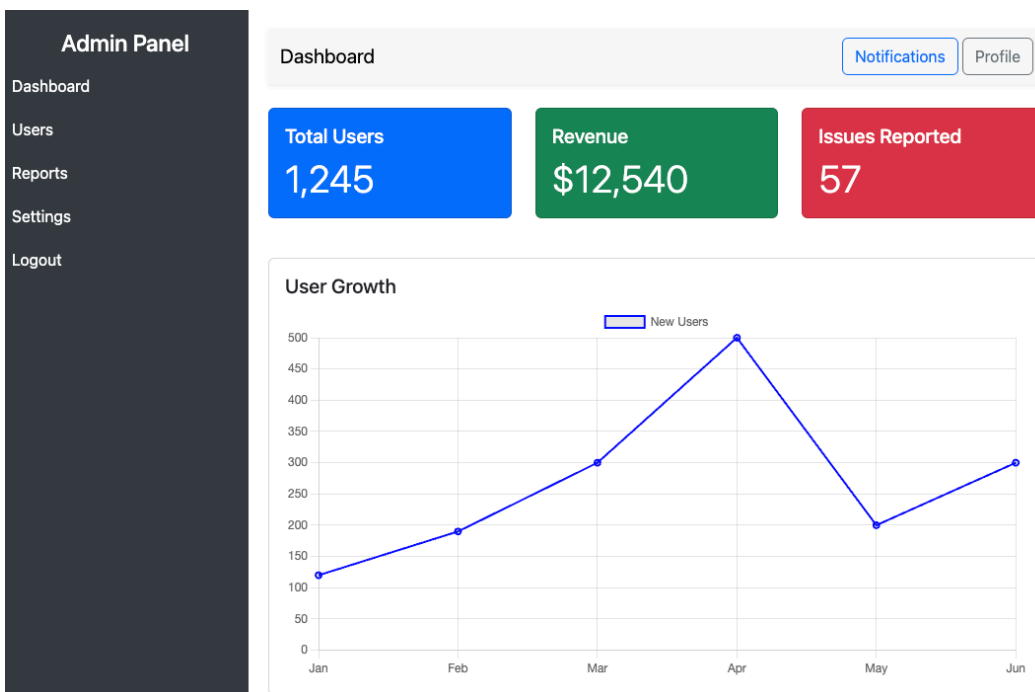
Result:



2. Bootstrap Dashboard Layout

"Create a Bootstrap 5 admin dashboard layout with a sidebar, top navigation bar, and a main content section with cards and charts."

Result:



3. Bootstrap Web Application with a Data Table

"Generate a modern Bootstrap 5 government web application with a data table."

Result:

GovApp

Sign Out

Navigation

Dashboard

Reports

User Management

Settings

Help & Support

Dashboard

Welcome to the government application dashboard. Below is the latest report data.

ID	Name	Department	Status	Action
001	John Doe	Health Department	Active	View
002	Jane Smith	Education Department	Inactive	View
003	Michael Johnson	Transportation	Active	View

4. Bootstrap Forms and Validation

"Create a Bootstrap 5 form with fields for name, email, phone, and password, including built-in form validation and tooltips."

Result:

Registration Form

Full Name

Enter your full name

Please enter your name.

Email Address

scott@scottdoucet.com

Phone Number

Enter your phone number

Please enter a 10-digit phone number.

Password

Enter a strong password

Please enter a valid password.

Register

5. Bootstrap Modal & Alerts

"Generate a Bootstrap 5 modal with a contact form and include success and error alert messages."

Result:

Open Contact Form

Contact Us

Something went wrong. Please try again.

Full Name

Please enter your name.

Email Address

Please enter a valid email.

Message

Please enter your message.

Send Message

6. Bootstrap E-commerce Template

"Create a Bootstrap 5 e-commerce product listing page with a responsive grid, search bar, filters, and a shopping cart button."

Result:

ShopNow

Home Products Contact Cart 2

Search for products...

All Categories

product

Smartphone

\$499

Add to Cart

product

Laptop

\$899

Add to Cart

product

T-Shirt

\$29

Add to Cart

product

Jeans

\$49

Add to Cart

product

Blender

\$69

Add to Cart

product

Microwave

\$149

Add to Cart

7. Bootstrap Login/Registration Form with Toggle Light/Dark Mode

"Generate a Bootstrap 5 login and registration page with a card layout, form validation, and social login buttons including a toggle light and dark mode."

Result:

Login

Email

Password

Login

Switch to Register

Or continue with:

Login with Facebook

Login with Google

Toggle Light/Dark Mode

Register

Email

Password

Confirm Password

Register

Switch to Login

Or continue with:

Login with Facebook

Login with Google

Toggle Light/Dark Mode

8. Bootstrap Responsive Table with Search & Sort

"Create a Bootstrap 5 responsive table with sorting, filtering, and search functionality using JavaScript."

Result:

Sortable and Searchable Table

Age


▼

ID	Name	Age	Country
4	Ana Martinez	30	Mexico
3	Samuel Green	22	Canada
2	Jane Smith	34	UK
1	John Doe	28	USA

9. Bootstrap Profile Page

"Create a Bootstrap 5 user profile page with an avatar, bio section, settings tabs, and an activity feed."

Result:



Daisy Doucet

[Edit Profile](#)

Settings **Activity Feed**

Account Settings

Email

Password

[Save Changes](#)

Final Thoughts

ChatGPT is a powerful tool to effectively to generate, modify, and optimize Bootstrap code for rapid prototyping. Whether you need a full webpage, a UI component, or a responsive layout, structuring your requests properly ensures high-quality, code for prototyping or production.

I like to start out with a basic design and make further adjustments by entering additional modifications:

"Same as above, but change the headings to H2, bold and #171717. Add validations including asterisks to all required form fields."

With each iteration, your prototype gradually comes to life, evolving closer to your vision. Since the first prompt rarely captures the full extent of you're intended design, the process of fine-tuning allows for a more dynamic and precise process, making your vision a reality with each refinement.

Human-in-the-Loop

ChatGPT is a powerful tool for content creation, capable of generating text quickly and efficiently. However, it's important to recognize that AI-generated content, particularly written text, should always be carefully reviewed and edited for accuracy, clarity, and to sound "human-like". While ChatGPT can assist in brainstorming, drafting, and refining ideas, having a human-in-the-loop ensures that the final content conveys the intended message, appropriate and targeted language, and avoids potential errors.

IT Business Analyst (BA) Steps for Gathering Requirements

An IT Business Analyst (BA) follows a structured approach to gather requirements and business rules, ensuring the project meets stakeholder needs while aligning with business objectives. As a HCD professional working with Government agencies, it's a good idea to be familiar with these guidelines. The process generally includes the following steps:

1. Initiation & Planning

- **Understand Project Scope:** Review the business case, project objectives, and stakeholder expectations.
- **Identify Stakeholders:** Determine key individuals and groups who will provide input (e.g., business users, IT teams, compliance officers).
- **Define Requirements Approach:** Choose the methodology which is almost always Agile, however other options include Waterfall and Hybrid) and tools for documentation and collaboration.

2. Elicitation & Gathering Requirements

- **Stakeholder Interviews:** Conduct one-on-one or group interviews to collect insights about needs, pain points, and expectations.
- **Workshops & Brainstorming:** Facilitate collaborative sessions to gather detailed input and prioritize requirements.
- **Surveys & Questionnaires:** Gather input from a larger audience, especially when multiple user groups are involved.
- **Observation & Shadowing:** Observe existing workflows and system usage to identify inefficiencies and opportunities for improvement.
- **Document Analysis:** Review existing documentation, policies, regulations, and system reports to extract relevant information.

3. Business Rules Identification

- **Define Process Rules:** Identify constraints and logic that guide business operations (e.g., eligibility criteria, data validation).
- **Regulatory Compliance & Policies:** Ensure requirements align with industry standards, government regulations, and company policies.
- **Decision Logic & Workflow Rules:** Capture rules that drive automated workflows, approvals, and system behaviors.

4. Requirement Documentation & Validation

- **Use Cases & User Stories:** Write detailed user stories (Agile development) describing system interactions.
- **Process Flow Diagrams:** Visualize workflows to clarify system behavior and interactions.
- **Business Rules Catalog:** Document business rules in a structured format for reference.
- **Stakeholder Review & Sign-off:** Validate requirements with stakeholders through reviews and feedback loops.

5. Requirements Management & Traceability

- **Requirement Prioritization:** Use frameworks like MoSCoW (Must-have, Should-have, Could-have, Won't-have) to rank importance.
- **Traceability Matrix:** Map requirements to business objectives, ensuring consistency throughout development.
- **Version Control & Updates:** Continuously refine and manage requirement changes as the project evolves.

6. Handoff to Development & QA

- **Collaboration with Developers:** Clarify functional and technical specifications with the development team.
- **Support for Testing Teams:** Ensure test cases align with documented requirements and business rules.
- **User Acceptance Testing (UAT) Coordination:** Facilitate testing by end users to validate functionality before deployment.

By following these structured steps, an IT BA ensures that all requirements and business rules are accurately captured, documented, and implemented to deliver a successful solution.



Figure 6- CDC's Situation Room at the Emergency Operations Center.

Steps to Convert a Manual Operation into a Digital Web Application for Government Agencies

From an IT Business Analyst and UX Designer perspective, the process involves ensuring compliance, security, and accessibility while streamlining government operations into a digital web application.

1. Business Analysis (BA) - Understanding the Manual Process

Government operations often involve bureaucratic workflows, regulatory requirements, and multiple stakeholders. The first step is to fully understand these processes and translate them into digital solutions that improve efficiency while ensuring compliance.

Key Activities:

Stakeholder Engagement & Interviews

- Identify key decision-makers, end-users, and IT teams across departments.
- Conduct interviews and workshops to capture pain points, inefficiencies, and essential workflows.
- Consider accessibility (ADA Section 508 compliance), security (FedRAMP, FISMA, HIPAA), and interagency collaboration and data sharing.

Process Documentation & Mapping

- Analyze and document existing manual workflows using BPMN (Business Process Model and Notation).
- Identify redundancies, bottlenecks, and potential areas for automation.
- Define business rules, regulations, and data governance policies.

Gap Analysis & Requirements Gathering

- Compare current manual operations with digital best practices.
 - Develop a clear list of **functional and non-functional** requirements (e.g., system performance, security, compliance).
 - Identify regulatory reporting needs (OMB, GAO, state-specific audits).
 - Define user roles & permissions based on government hierarchy (e.g., administrators, agency staff, public users).
-

2. IT Analysis - Defining the Digital Solution

Government applications must be secure, scalable, and interoperable with existing systems.

Key Activities:

Technology Feasibility & Compliance Review

- Determine if the system should be cloud-based (AWS GovCloud, Azure Government) or on-premise.
- Ensure compliance with **FISMA, FedRAMP, NIST, HIPAA, and state/local data protection laws**.
- Evaluate **Single Sign-On (SSO)** and **multi-factor authentication (MFA)** for user security.

System Architecture & Integration Planning

- Define the system architecture: microservices, APIs, or monolithic structure.
- Determine integrations with existing government systems (e.g., DMV, IRS, state databases).
- Plan for data encryption, audit logs, and role-based access control (RBAC).

Security & Risk Assessment

- Conduct **risk assessments** following **NIST 800-53** guidelines.
- Plan for disaster recovery (DR) and data backup procedures.
- Identify potential cybersecurity threats (phishing, unauthorized access, data breaches).

3. UX Design - User Experience & Interface Design

Government web applications must prioritize accessibility, usability, and clarity to serve diverse user bases, including government employees, contractors, and the public.

Key Activities:

User Research & Accessibility Compliance

- Conduct periodic **focus groups and usability testing** with end-users that includes a set of procedures for the users to perform. Carefully monitor their progress and document any pain points that manifest. Review the performance and make any necessary changes to streamline and optimize the process.
- Design for **Section 508, WCAG 2.1 compliance**, ensuring digital accessibility for people with disabilities.
- Create **user personas** (e.g., caseworkers, public users, administrators) to help make UX decisions.

User Journey Mapping & Process Simplification

- Optimize forms, workflows, and navigation for ease of use.
- Automate approvals, notifications, and document submissions where possible.

Wireframing, Prototyping & Usability Testing

- Develop low- and high-fidelity **wireframes and interactive prototypes**.
- Conduct **iterative usability testing** with real users before finalizing the design.
- Ensure a **fully responsive design approach**.

UI Design & Branding

- Adhere to **U.S. Web Design System (USWDS)** for consistency across government platforms.
 - Use clear typography, color contrast, and intuitive navigation.
-

4. Development & Implementation

Building the application involves Agile development cycles, security testing, and compliance validation.

Key Activities:

Agile Development & DevSecOps Integration

- Work in Agile sprints (Scrum or SAFe methodology) with iterative releases.
- Implement **CI/CD pipelines** with security scanning in every phase.
- Ensure **API security (OAuth, JWT, Gov standards for API authentication)**.

Backend & Database Development

- Set up a **scalable and secure** database architecture (SQL, NoSQL, blockchain if required).
- Enable **data encryption at rest and in transit**.
- Implement **automated logging and auditing** features for compliance tracking.

Frontend Development

- Develop **responsive, 508 and ADA-compliant web interfaces** using React, Angular, or Vue.js.
- Optimize for performance and **low-bandwidth environments** (important for rural government users).

Quality Assurance (QA) & User Acceptance Testing (UAT)

- Conduct **load testing, security testing, and penetration testing**.

- Ensure compliance with **government cybersecurity frameworks** before deployment.
 - Pilot testing with a **select group of government users** for feedback.
-

5. Deployment & Training

A structured rollout is crucial for adoption, minimizing downtime, and ensuring users are well-equipped.

Key Activities:

Phased Deployment & Rollout Strategy

- Deploy the system in phases (pilot program → beta launch → full rollout).
- Monitor system performance with real-time analytics.
- Provide **24/7 support channels** during the transition period.

User Training & Change Management

- Create **interactive training materials**, including **video tutorials, user guides, and live webinars**.
- Conduct **on-site training for government employees** to ensure smooth adoption.
- Implement a **helpdesk or chatbot for real-time assistance**.

Feedback Loop & Continuous Improvement

- Collect post-launch feedback from users via surveys and focus groups.
 - Monitor **performance, accessibility issues, and compliance changes**.
 - Release **regular updates based on new policies, security threats, and user feedback**.
-

Conclusion: Ensuring Long-Term Success

A successful digital transformation in government requires collaboration, security, compliance, and user-centered design. By following these steps, agencies can move away from inefficient manual operations toward scalable, secure, and accessible digital solutions.

Strategic Planning and Design of Government Web Applications for Secure Data Sharing

Government web applications play a critical role in delivering public services, and their ability to seamlessly and securely share data with other agencies and partners is essential for efficiency, security, and compliance. Interoperability between government systems ensures that agencies can coordinate efforts, reduce redundancy, and improve decision-making by accessing real-time, accurate information.

Whether it's law enforcement, public health, transportation, or social services, the ability to securely exchange data helps agencies work together to serve citizens more effectively. A well-planned, scalable architecture ensures that these applications can support future integrations and emerging technologies, avoiding costly overhauls down the line.

Additionally, data security, privacy, and regulatory compliance must be built into the design from the start. Government web applications must adhere to strict security frameworks such as FISMA, FedRAMP, HIPAA, and NIST 800-53 to protect sensitive information. Implementing role-based access controls (RBAC), encryption, and API security protocols ensures that only authorized users and agencies can access the necessary data.

By designing applications with open APIs, standardized data formats, and cloud-based interoperability, government agencies can promote innovation, improve service delivery, and ensure transparency while maintaining the highest levels of security and privacy. Thoughtful planning and design are key to creating efficient, resilient, and future-proof government web applications that drive cross-agency collaboration and enhance public trust.

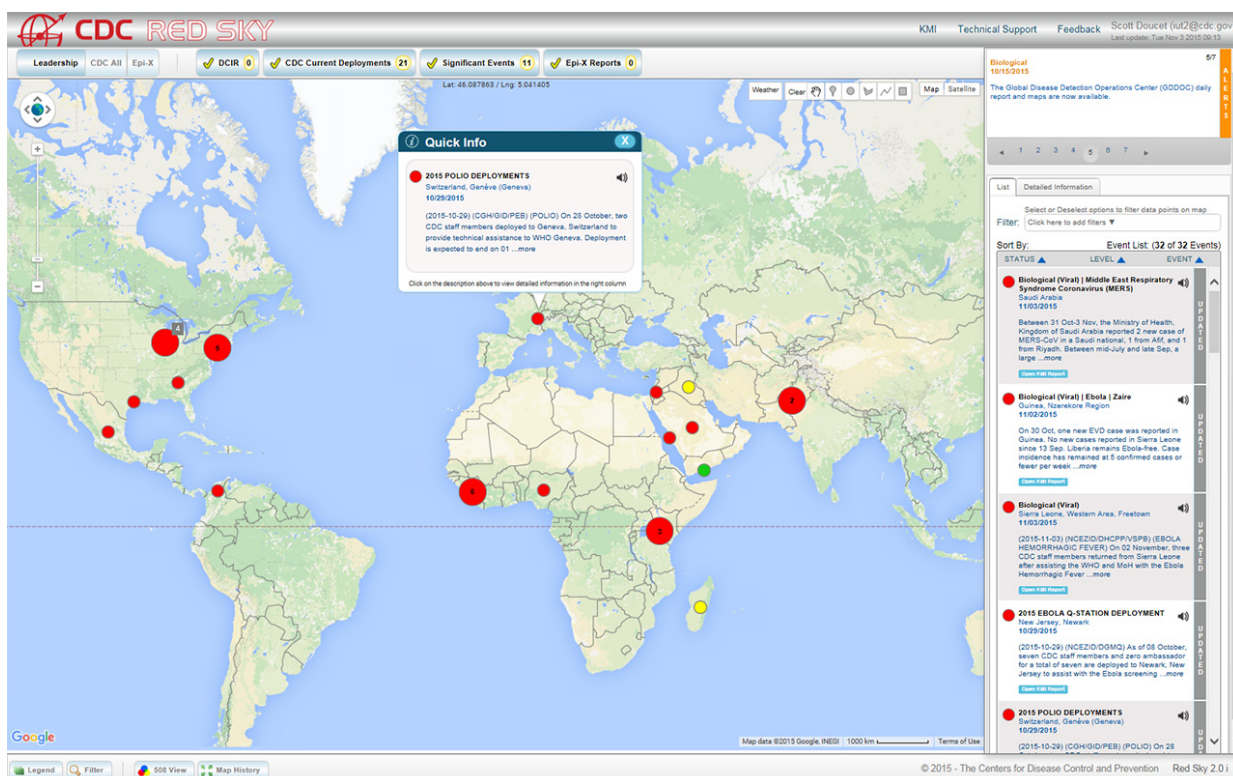


Figure 7- CDC's Red Sky & KMI applications securely sharing data with Texas Red Sky & other agencies

Style Guides

As a UX Designer, one of my initial tasks is creating a Style Guide, often using PowerPoint. This guide serves as a blueprint for the project's visual and functional design, outlining essential elements such as color palettes (including their corresponding CSS Hex values), typography, best practices, and component recommendations. It ensures consistency across the user interface while aligning seamlessly with the agency's brand by incorporating their graphic standards, logos, and other key visual identity elements.

A well-defined style guide not only enhances usability and efficiency but also ensures compliance with regulations such as Section 508 of the Rehabilitation Act, WCAG (Web Content Accessibility Guidelines), and other federal web standards.

A well-documented style guide serves as a single source of truth for designers and developers, reducing the time spent making design decisions and preventing unnecessary revisions. By leveraging pre-defined templates, reusable UI components, and Bootstrap-based design systems, teams can quickly create a functional web application while maintaining compliance. Developers can focus on writing code without having to worry about styling, promoting efficiency and collaboration across the team. This approach also supports agile development, allowing for continuous improvements and iterations without sacrificing design consistency.

A well-structured style guide makes it easier to scale and maintain a government web application over time. As new technologies and accessibility requirements emerge, the guide can be updated to reflect best practices, ensuring ongoing compliance and a seamless user experience. This is particularly important for long-term government projects where multiple teams and contractors may contribute to the application over time.

As I create the Style Guides, I also will build out the front end of the web application in Bootstrap and manually test for 508 compliance using tools such as:

- WAVE
- ANDI
- Color Contrast Analyzer

Once I have created the Style Guide and the Bootstrap web application high fidelity prototype, I demo it to the developers to get their feedback. Once the team has provided input and the design is finalized, I demo it to the stakeholders to get their approval. All custom styling is added to one CSS file, usually called custom.css that overwrites any native Bootstrap ID's or classes. The HTML, CSS and JavaScript code can be handed off to the development team to start adding dynamic functionality to the web application.

This effort in the beginning will save an enormous amount of development time and allow for rapid styling updates if needed.

Creating Style Guides & ChatGPT

Creating Style Guides is an essential step in the HCD process for web application development and ChatGPT can assist in the process, especially with some of the more tedious tasks like creating palette color examples.

For example, if you wanted to create an expanded color palette based on several colors, you can specify the information and have ChatGPT generate iterations for you to review and tweak accordingly:

“Create a style guide palette based off of bootstraps basic color palette along with an expanded palette using pastel colors. Place the color label and corresponding hex value in the center of the colors.”

Results:

Bootstrap Basic Color Palette	Expanded Pastel Color Palette
Dark #343a40	Pastel Teal #B2F7EF
Light #f8f9fa	Pastel Red #FF6961
Info #17a2b8	Pastel Orange #FFDAC1
Warning #ffc107	Pastel Purple #C3B1E1
Danger #dc3545	Pastel Yellow #FDFD96
Success #28a745	Pastel Pink #FFB7C5
Secondary #6c757d	Pastel Green #77DD77
Primary #007bff	Pastel Blue #A7C7E7

Most government agencies typically have an established branding guide that outlines essential design elements such as colors, typography, and overall styling to maintain consistency across official communications. However, when there is room for flexibility, whether for a new initiative, a website redesign, or a digital campaign, ChatGPT can serve as a valuable brainstorming tool.

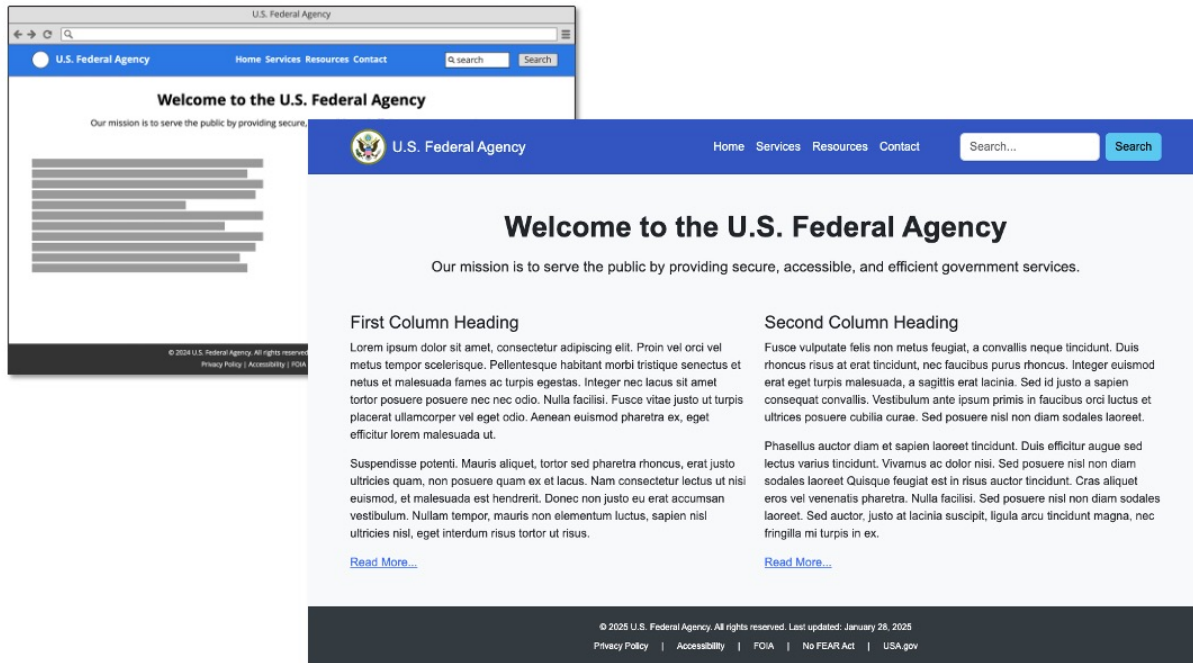
By generating creative alternatives quickly, it can suggest fresh color palettes, font pairings, and design concepts while ensuring they align with accessibility standards and the agency’s core identity. This allows for an efficient exploration of innovative branding possibilities while still adhering to governmental guidelines.

The logo features the letters 'UX' in a large, bold, sans-serif font. The 'U' and 'X' are filled with a vertical gradient transitioning from blue at the top to red at the bottom. Below 'UX', the words 'DESIGN GUIDE' are written in a smaller, orange, sans-serif font.

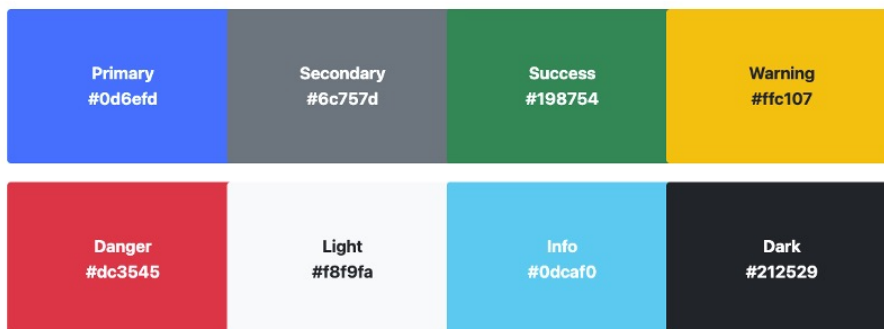
UX DESIGN GUIDE

Created by: Scott Doucet

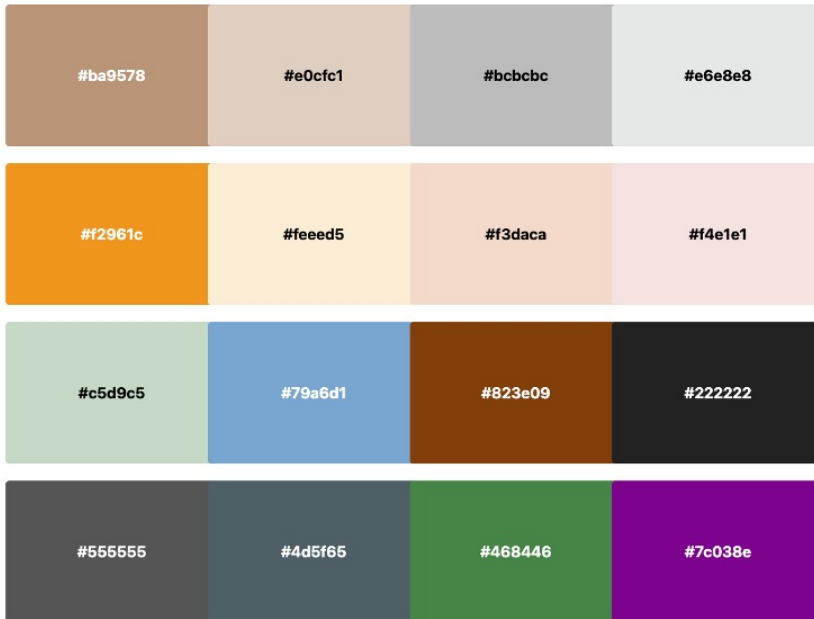
UX Mockups



Colors – Base Palette



Colors – Extended Palette



Web Application Language

Clear communication guides users, sets expectations, and eliminates confusion. Well-crafted language builds trust, enhances usability, and reinforces brand credibility. When words are clear and intentional, users navigate with confidence—making for a seamless and engaging experience.

Do:

- **The 4 P's: Precise, Professional, Polite, Plain.**
- Use clear and human-friendly language.
- Ensure every word has purpose and clarity.
- Ask yourself: "**Will users understand and know exactly what to expect when they read, click, or take action?**"

Don't:

- Avoid unnecessary words and redundancy (e.g., vague terms like "Data").
- Don't blame, ridicule, or make users feel incompetent.
- Steer clear of technical jargon and developer-speak.
- Avoid obscure codes, abbreviations, and incorrect capitalization or formatting.
- A well-designed site shouldn't need step-by-step instructions—if it does, rethink the user experience.

Forms

Form Title

Name *	Position	Organization *
<input type="text" value="Enter your name"/>	<input type="text" value="Enter your position"/>	<input type="text" value="Enter your organization"/>
Office	Start Date	Email *
<input type="text" value="Enter your office location"/>	<input type="text" value="mm/dd/yyyy"/>	<input type="text" value="Enter your email"/>
Options	Radio Selector	Checkbox Options
<input type="text" value="Select an option"/>	<input type="radio"/> Option 1 <input type="radio"/> Option 2 <input type="radio"/> Option 3 <input type="radio"/> None	<input type="checkbox"/> Option 1 <input type="checkbox"/> Option 2 <input type="checkbox"/> Option 3
<input type="button" value="Clear"/> <input type="button" value="Submit"/>		

- **Use radio buttons** when users can select only **one** option—be mindful of this limitation.
- **Provide a "None" option** when applicable, so users aren't forced into a choice.
- **Use checkboxes** for multiple selections from a list.
- **Ensure both the checkbox/radio and its label are clickable** for better usability.

Form Validations

The following fields need to be corrected before submitting:

Name is missing
Organization is missing
Email is needed (enter a valid email format)
Date format is needed (MM/DD/YYYY)

Best UX Practices for Form Validation:

- **Clear error messages:** Describe what went wrong and how to fix it (e.g., "Enter a valid email format").
- **Real-time validation:** Provide feedback as users type, but avoid excessive interruptions.
- **Highlight errors:** Use color, icons, and text to make issues obvious.
- **Inline validation:** Show errors near the problematic field, not just at the top.
- **Accessible validation:** Ensure error messages work for screen readers and keyboard users.

Form Title

Name *	Position	Organization *
<input type="text" value="Enter your name"/>	<input type="text" value="Enter your position"/>	<input type="text" value="Enter your organization"/>
Office	Start Date	Email *
<input type="text" value="Enter your office location"/>	<input type="text" value="mm/dd/yyyy"/>	<input type="text" value="Enter your email"/>
Options	Radio Selector	Checkbox Options
<input type="text" value="Select an option"/>	<input type="radio"/> Option 1 <input type="radio"/> Option 2 <input type="radio"/> Option 3 <input type="radio"/> None	<input type="checkbox"/> Option 1 <input type="checkbox"/> Option 2 <input type="checkbox"/> Option 3
<input type="button" value="Clear"/> <input type="button" value="Submit"/>		

Data Tables

Data Table

Show 10 entries

Search:

<input type="checkbox"/>	ID	Name	Email	Phone	Address	Actions
<input type="checkbox"/>	1	John Doe	johndoe@example.com	+1234567890	123 Main St, City	
<input type="checkbox"/>	2	Jane Smith	janesmith@example.com	+0987654321	456 Elm St, Town	
<input type="checkbox"/>	3	Michael Brown	michael@example.com	+1122334455	789 Oak St, Village	
<input type="checkbox"/>	4	Emily White	emily@example.com	+2233445566	987 Pine St, District	
<input type="checkbox"/>	5	Robert Johnson	robert@example.com	+3344556677	654 Cedar St, Borough	

Showing 1 to 5 of 5 entries

Previous

1

Next

Data Table Anatomy

- Search Criteria
- Filter Box
- Column Control
- Table Display Results
- Persistent Actions
- Pagination
- Bulk Checkbox
- Table Header
- Content Rows
- Row Checkboxes
- "Meatballs" Menu Icon (sub-menu)
- Expansion Icon

Data tables provide a clean, structured way to display large amounts of information in a **readable and interactive** format. They enhance **usability** by supporting features like **sorting, filtering, pagination, and responsive design**, making it easier for users to find and analyze data. Well-designed tables improve **clarity and efficiency**, ensuring that key information is accessible without overwhelming the user. For better **UX**, use **clear headers, alternating row colors, and sufficient spacing**, and consider adding **search and export options** for enhanced functionality. 🚀

Alerts

Alerts

Primary Alert

Option for relaying general or high emphasis occurrences within a system

Secondary Alert

Option for relaying general or high emphasis occurrences within a system

Danger Alert

Option for relaying general or high emphasis occurrences within a system

Warning Alert

Option for relaying general or high emphasis occurrences within a system

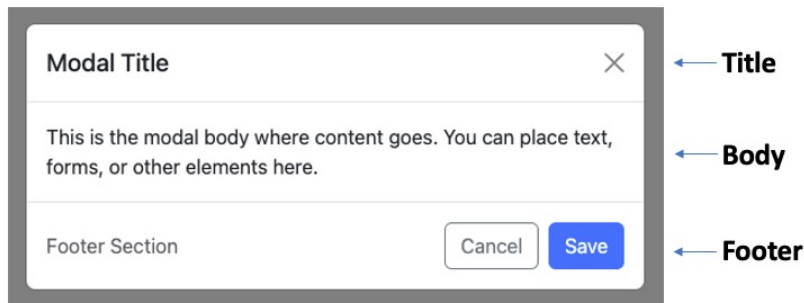
Success Alert

Option for relaying general or high emphasis occurrences within a system

Info Alert

Option for relaying general or high emphasis occurrences within a system

Modals



Bootstrap 5 modals should be used for focused, short-term interactions that require user attention without navigating away from the current page. They work well for confirmation dialogs, form inputs, or displaying additional information without disrupting the main experience. Ensure that modals are **accessible**, with clear headings, keyboard navigation support, and a logical focus order. Use a **dismiss button ("X")** and a **close action** to avoid trapping users and always keep content concise and relevant.

Typography

This is a heading using H1

This is a heading using H2

This is a heading using H3

This is a heading using H4

This is a heading using H5

This is a heading using H6

Body Text (1em)

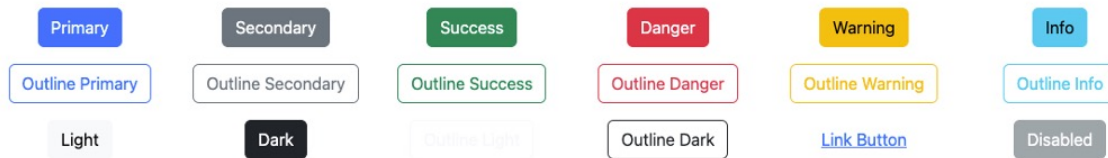
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nullam scelerisque, justo vel suscipit pellentesque, erat lectus congue lacus, ac fermentum sapien velit ac lacus. In hac habitasse platea dictumst. Vestibulum vel tortor nec libero suscipit dapibus. Fusce tincidunt, nisi in venenatis congue, velit nulla tincidunt nunc, eget lacinia nunc libero at mi.

Footer Text (.8em)

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nullam scelerisque, justo vel suscipit pellentesque, erat lectus congue lacus, ac fermentum sapien velit ac lacus. In hac habitasse platea dictumst. Vestibulum vel tortor nec libero suscipit dapibus. Fusce tincidunt, nisi in venenatis congue, velit nulla tincidunt nunc, eget lacinia nunc libero at mi.

Buttons

Button Styles



Button States & Hierarchy

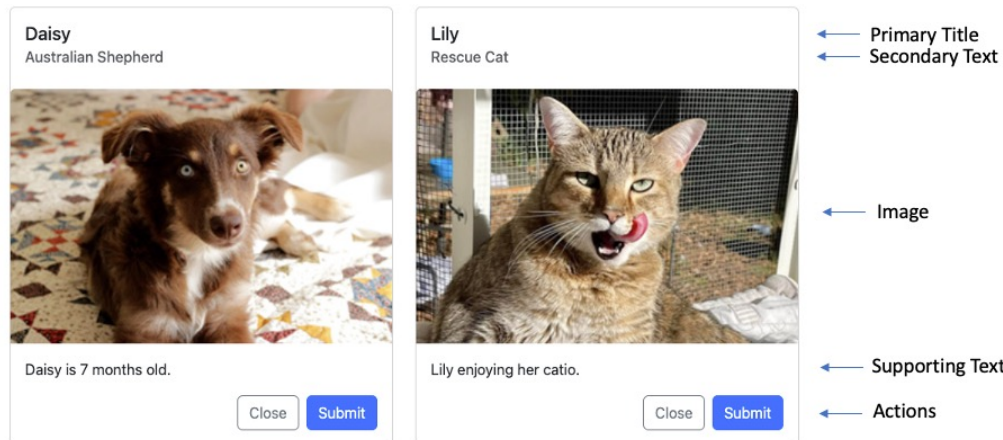


Hierarchy: High, Medium, Low Emphasis

- Buttons should have either High, Medium or Low Emphasis
- A page should contain a single prominent button for the primary action (high emphasis)
- Other buttons of lower emphasis can accompany the single prominent button for other actions or actions of less importance.
- Visual styling differ between High, Medium and Low Emphasis for easy differentiation.

Cards

Cards



Bootstrap cards are a versatile UI component that helps organize and present content in a **structured, visually appealing** way. They are ideal for displaying **summarized information**, such as user profiles, product listings, or news articles, using a combination of **text, images, and buttons**. Cards provide a **responsive, consistent layout** that adapts well across different screen sizes. They improve readability and user engagement by structuring content into easily digestible sections. For a better **UX**, ensure cards have **clear hierarchy, sufficient spacing, and intuitive actions** to guide users effectively.

Accordion

Accordion

Collapsible 1	^
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer nec odio. Praesent libero. Sed cursus ante dapibus diam.	
Collapsible 2	v
Collapsible 3	v

Accordions work well for **FAQs, documentation, dashboards, and settings panels**, where users may need quick access to specific details. For a better **UX experience**, ensure that accordion labels are **clear and descriptive**, state retention is considered, and keyboard accessibility is supported.

About the Author



I am a seasoned professional with over 30 years in the IT industry, specializing in Human-Centered Design (HCD), web development, e-learning, and interactive multimedia production. As the founder of REDHYPER, a design, development, and digital marketing company, I deliver innovative digital solutions tailored for Fortune 500 companies, government agencies, and small businesses.

Throughout my career, I have collaborated with prominent organizations such as the Centers for Disease Control and Prevention (CDC), National Institutes of Health (NIH), Veterans Affairs, Lockheed Martin, and Allstate Insurance Company. My expertise spans HCD design, front-end web development, e-learning, and interactive multimedia solutions, with a strong emphasis on accessibility and compliance as a DHS Section 508 Trusted Tester.

I am highly proficient in UI, UX, and Human-Centered Design (HCD), with a deep understanding of how technology interacts with users to create intuitive, accessible, and engaging digital experiences. I ensure that every project I undertake prioritizes user needs while aligning with business and regulatory requirements. My work continues to support best practices in UX/UI design and innovation across multiple industries.

My technical proficiencies include HTML5, CSS, Bootstrap, JavaScript, Angular, Adobe Creative Cloud, Visual Studio Code, Figma, Balsamiq Wireframes and TechSmith Camtasia Studio. I am also a strong advocate for leveraging artificial intelligence and machine learning to solve complex business challenges and drive innovation.

To support custom applications, I have produced numerous computer-based training videos for Fortune 500 companies and state and federal government agencies. Additionally, I developed Lectora-based courses for the CDC's Laboratory Training Branch. Most recently, I completed the [DHS 508 Trusted Tester online training program](#), which includes over 60 instructional videos.

In addition to my professional endeavors, I created [Red Sky Health Guard](#), a cloud-based data visualization dashboard and mobile app designed to safeguard businesses and their personnel. I also produced the pilot episode of [History Roads](#), a 30-minute show that takes viewers on a journey through the rich history of American towns and regions.

I hold certifications in Google UX Design, ITIL 4 Foundation in Service Management, Scrum Master, and DHS Section 508 Trusted Tester. I am also an FAA Part 107 Licensed Remote Pilot.

Residing in Norcross, Georgia, I enjoy life with my wife Brandie, our Australian Shepherd named Daisy, and our cat Lily.