



VA HEALTH CARE CONFERENCE 2021

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VA



U.S. Department of Veterans Affairs

Office of Information and Technology



What is VA's CTO Office doing in health delivery?

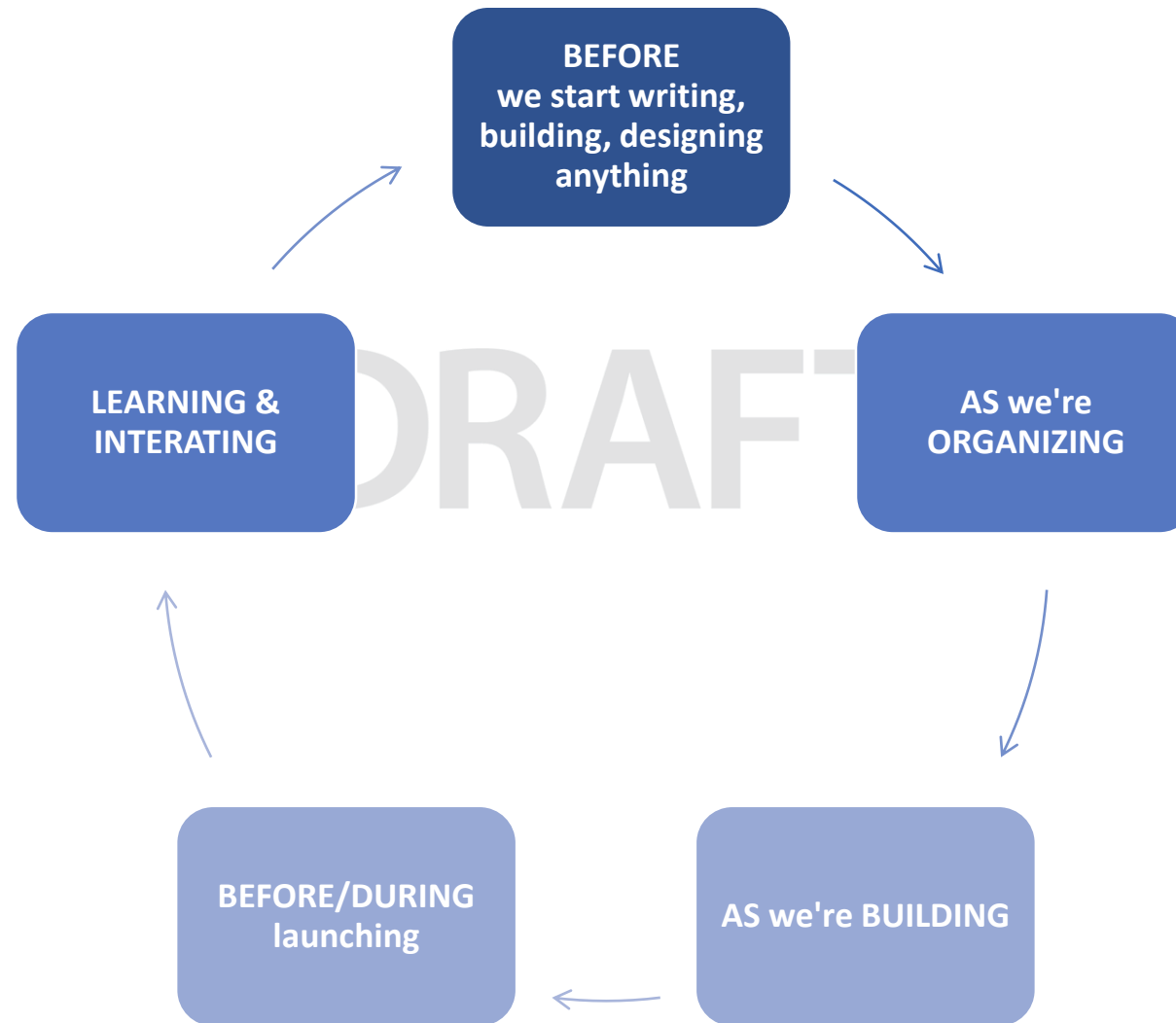
We modernize health care
with Veterans and their extended care teams
by
implementing data-driven digital solutions
and
creating inclusive & holistic patient experiences
that improve health outcomes.



Principle #1

Design better health care experiences *with*
Veterans & their care teams, not *for* them.

Designing better health experiences starts at the problem definition phase



Design with context & your full user ecosystem in mind

- “Human-centered design helps us to **understand what our customers really need** so that we can create solutions that are **relevant and important to them.**

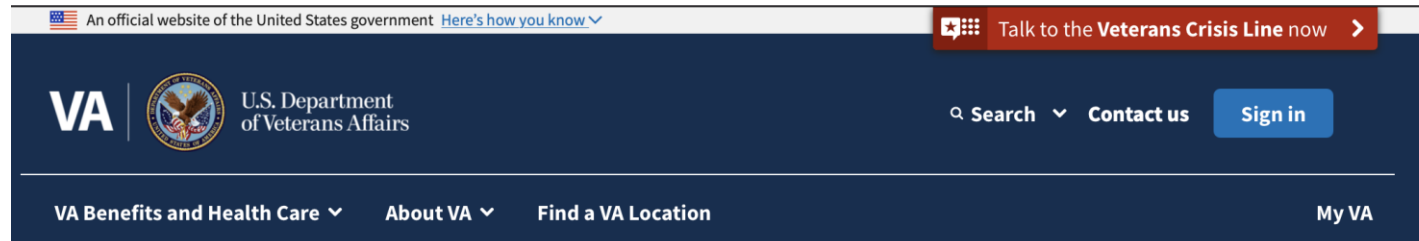
It gives us the tools to put Veterans at the start and the center of our work.”

“Design is more than the aesthetics and artifacts associated with products; it’s a strategic function that focuses on what people want and need and dream of, then crafts experiences across the **full ecosystem that are meaningful and relevant for our customers.**”



-Designing for Veterans,
A Toolkit for Human-Centered Design

Example: Scheduling COVID-19 vaccines



[Home](#) › [Health care](#) › [COVID-19 vaccines at VA](#) › [Sign up to get a vaccine](#)

Sign up to get a COVID-19 vaccine at VA

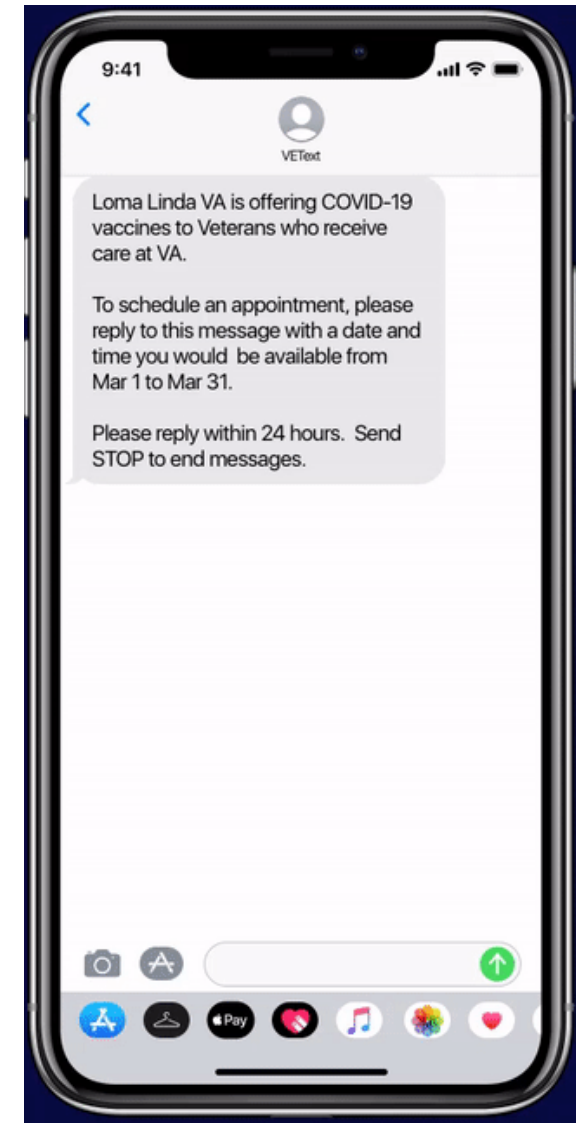
To get started, tell us about your experience with VA health care. We'll then guide you to the right form.

Are you a Veteran who is enrolled in VA health care or receiving care at VA? (*Required)

- ☐ Yes
- ☐ No
- ☐ I'm not sure

[Continue »](#)

Note: We take your privacy seriously. [Read our Privacy Act statement](#)



Example: Scheduling COVID-19 vaccines



Jake Tapper ✓
@jaketapper

...

Second time this week I've heard from a veteran who had a positive vaccine experience at the VA —



Kristofer Goldsmith ✓ @KrisGoldsmith85 · Mar 11

Yesterday (Wednesday) I went to @DeptVetAffairs website and signed up for “more info” about when I could receive the COVID vaccine. They called this morning (Thursday), and gave me a choice of Moderna or J+J. My appointment is Saturday morning.

Do it:

va.gov/health-care/co...

Good news re the vaccine and the VA. Just posted this to fb:

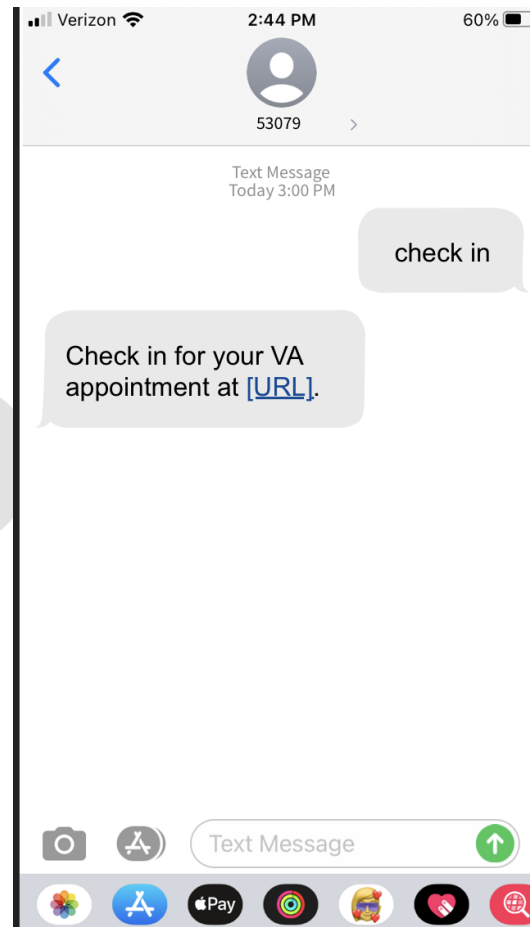
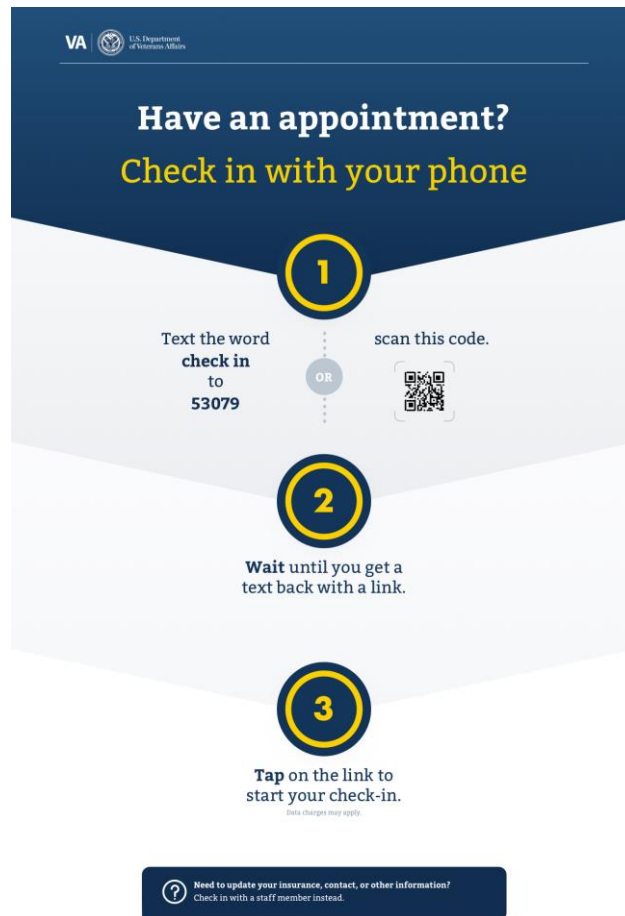
Just got my first Pfizer vaccine shot through Veterans Affairs.

On Wednesday I received an unsolicited text from the VA announcing vaccine availability and asking me to submit my preferred date/time. I got my first choice confirmed via text, showed up at the VA hospital this morning, and was done with the entire process in 40 minutes (including the required 15 minute post-shot wait time). I already have an appointment for my second shot.

Hundreds of fellow veterans were there with me. Everything was run well and couldn't have gone more smoothly.

A+ for the VA

Example: Mobile check-in



Talk to the **Veterans Crisis Line** now

VA U.S. Department of Veterans Affairs **Menu**

Search **Contact Us** **Sign In**

[Back to last screen](#)

Your appointments

Here are your appointments for today: September 25, 2020.

9:30 a.m. ET

Facility: Cheyenne VA Medical Center
Clinic: Purple-Dr.Agustin

Your appointment started more than 10 minutes ago. We can't check you in online. Ask a staff member for help.

10:00 a.m. ET

Facility: Cheyenne VA Medical Center
Clinic: Dermatology MOD4 MD5 A

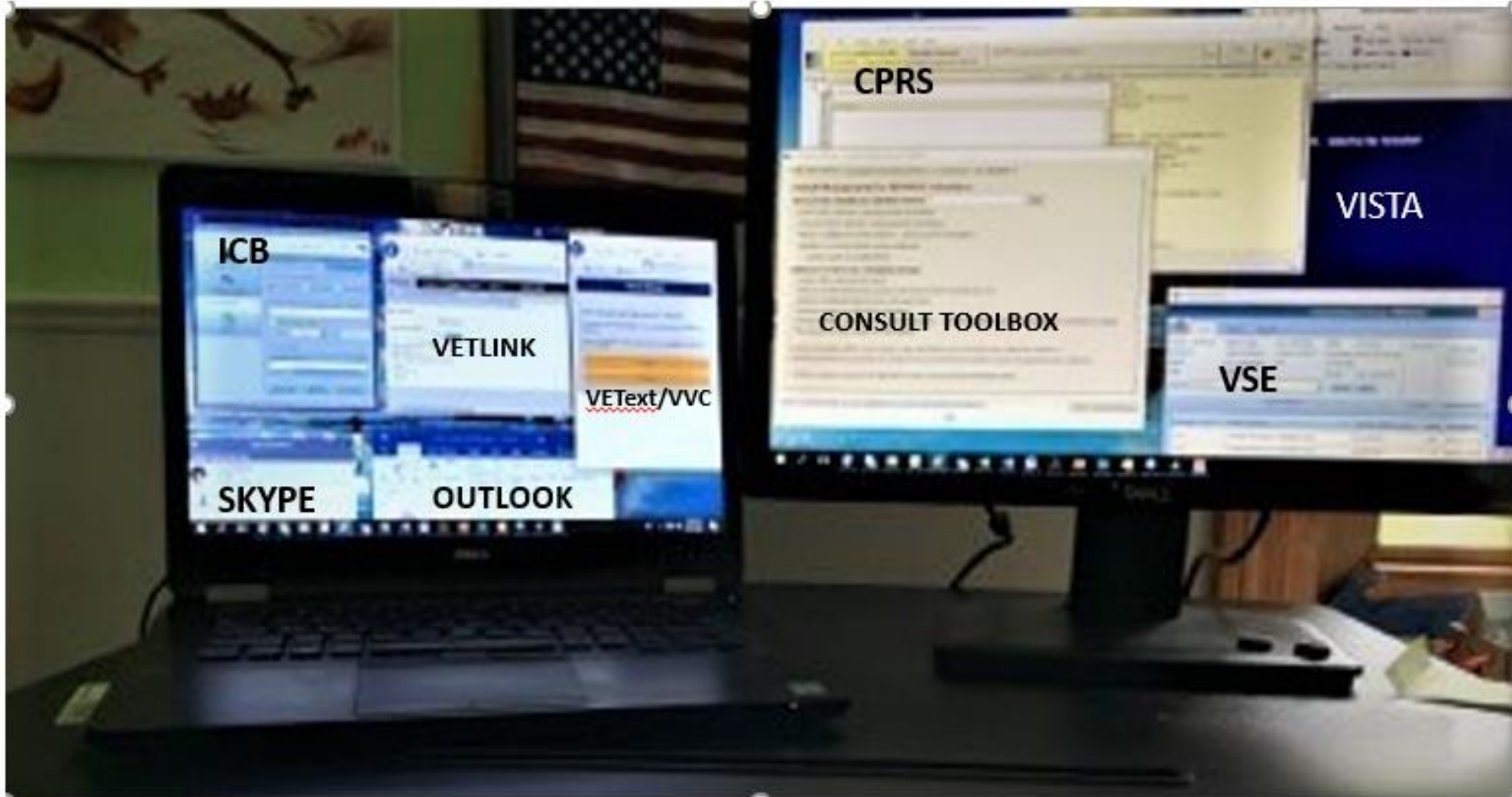
You checked in at 9:55 a.m. ET.

1:00 p.m. ET

Facility: Cheyenne VA Medical Center
Clinic: Cardiology Specialty Red Clinic #4

Check in now

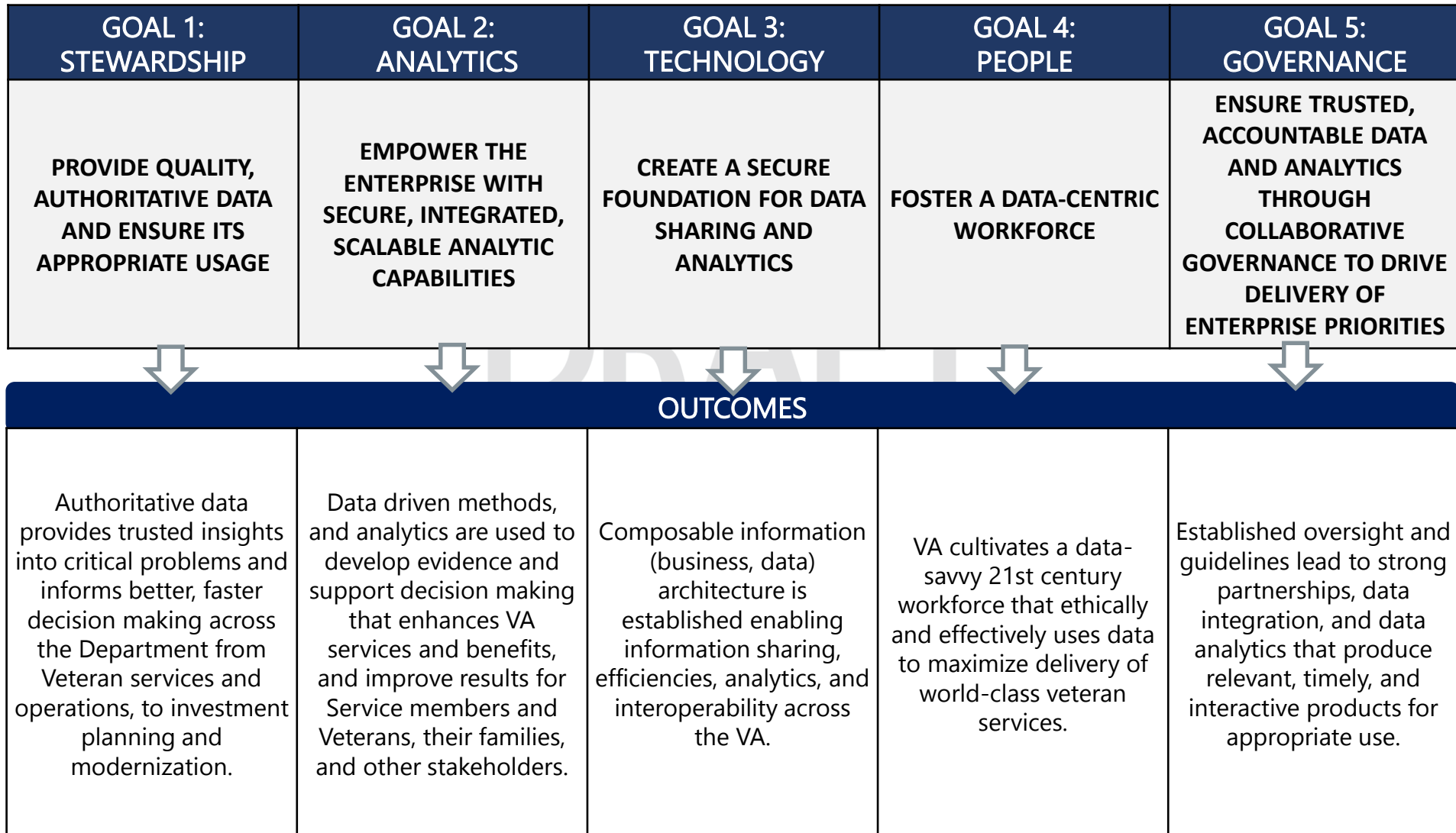
Example: Mobile check-in



Principle #2

Give VA staff the right data, at the right time, in the right format, and in the right context to help them deliver better health outcomes.

Enhance VA decision making through smarter, user-informed data analytics



Clinical decision support improves provider satisfaction & health outcomes

- Clinical decision support (CDS) provides clinicians, staff, patients or other individuals with knowledge and person-specific information, intelligently filtered or presented at appropriate times, to enhance health and health care.
- It requires computable biomedical knowledge, person-specific data, and a reasoning or inferencing mechanism that combines knowledge and data to generate and present helpful information to clinicians as care is being delivered. This information must be filtered, organized and presented in a way that supports the current workflow, allowing the user to make an informed decision quickly and take action.
- Health information technologies designed to improve clinical decision making are particularly attractive for their ability to address the growing information overload clinicians face, and to provide a platform for integrating evidence-based knowledge into care delivery.

-[HealthIT.gov: What is clinical decision support?](#)

Example: COVID-19 patient manager


COVID-19
Patient Manager

Pam McGee

Susan A Clark, MD

About this tool

Help

 Not all fields are required but the quality of recommendations improves with the number of fields that are completed.

Patient Data

The following data is fed into ACEP algorithms to generate the disposition recommendations to the right.

Vitals	
Respiratory Rate	22
Oxygen Saturation (%)	94
Heart Rate (per minute)	97
Blood Pressure (mmHg)	92 / 81
Temperature (°F)	102.1
Alertness	<input type="checkbox"/> Alert <input type="checkbox"/> Confused
Supplemental Oxygen	<input type="checkbox"/> No <input type="checkbox"/> Yes
Performance Status	Missing Data

Summary

Severity Classification

Based on NIH criteria

Mild

Risk Prognostication

Risk of mortality and/or end-organ failure

29%

Risk Assessment

Number of additional risk factors

≥ 2

Diagnostic Interpretation

Number of concerning lab/imaging results

≥ 2

Disposition

ACEP recommends the following based on available data:

Consider Admission

Admission location based on clinician's judgement:

- Observation
- Inpatient Floor
- Intermediate

At times of surge and capacity constraints some patient who would normally be admitted to the hospital, may need to be sent home:

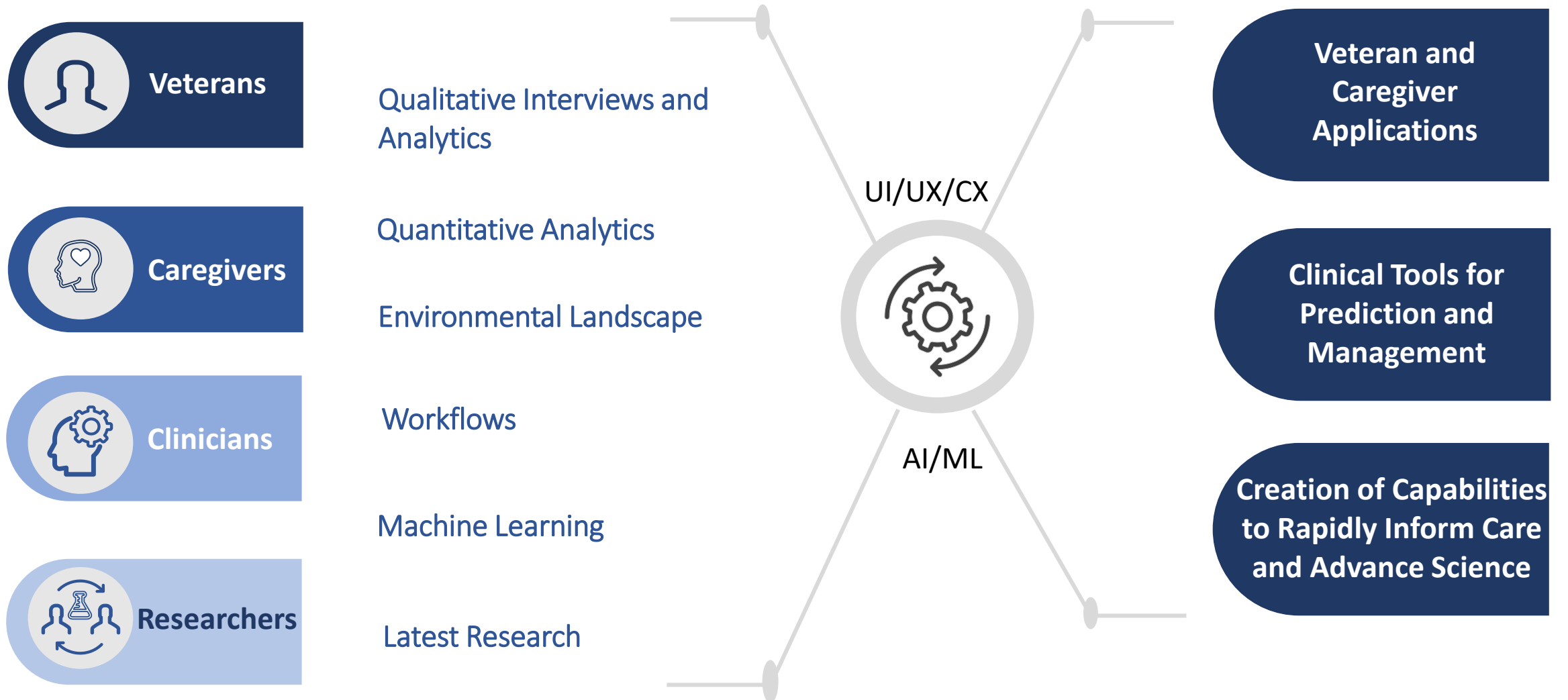
- Supply patient with educational materials on precautions and items to be monitoring at home ([CDC Patient Educational Materials](#))
- Follow-up visit arranged via PCP or tele-health
- Consider home pulse oximetry
- Consider home oxygen therapy

Copy to Clipboard

Summary, disposition, and treatment sections are copied from above.

When seeing a patient with a mild to moderate COVID-19 case, VA doctors emphasized their need for data-backed disposition recommendations as well as an aggregated, organized set of up-to-date guidelines and best practices. To meet their needs, our team developed the COVID-19 Patient Manager. Built on using the SMART on FHIR standard, the COVID-19 patient manager supports decision making in the ER setting.

Example: Long-COVID as a strategic & enabling use case



Principle #3

To create truly inclusive experiences, design for the user who is going to have the hardest time using what we build.

“Accessibility” is not a thing you do at the end before you launch

- **Accessibility** is an **outcome**, generally linked to compliance, ensuring solutions are usable by everyone.
- **Inclusive design** is a **human-centered process** considering user diversity, by including and learning from a range of perspectives. Accessibility and inclusive design should be a part of all product design and development conversations to ensure no one is excluded from using the solutions.
- *Our inclusive research guidelines*
<https://github.com/departments-of-veterans-affairs/va.gov-team/tree/master/teams/vsa/accessibility/research>

Inclusive development is a critical part of inclusive design.

- Within the code itself there is accessibility work to be done, as the code must be accessible for others. There are developers who have disabilities, as well as those with situational or temporary considerations such as being new, non-native speakers, tired, depressed, stressed, cognitively fatigued, overwhelmed, etc. Proper commenting and thoughtful architecture can meet people where they are. All documentation must be accessible.
- Inclusive development is taking the next logical step and adhering to inclusive design principles during the development process. It is a shift in the way you think about development. As you build, you can choose to create code, markup, libraries that are accessible.
- A11y style guide: www.a11y-style-guide.com

Every stage counts in an accessibility first approach



VA.gov Mobile Accessibility Testing Plan

The VA.gov mobile app development team considers accessibility to be a priority requirement in the design and implementation of the app. The purpose of this document is to outline:

- The requirements that will guide the the VA.gov Mobile App build
- The accessibility tools and materials that will be used during testing
- The testing protocol and steps that will be taken when reviewing the accessibility capabilities in the app

Section 1: Accessibility Requirements & Approach

The following items are based on WCAG 2.0 and Section 508 accessibility standards, organized by product function. Each item description reflects both the requirement and the referenced standard, along with the corresponding implementation approach.

- Items that have "Design?" "Designs" bolded reflect standards that must be facilitated by the design workstream
- Items that have "Programmatic?" bolded reflect standards that focus on technical implementation
- Applicable WCAG 2.1 requirements are also included to reference best practice and may be followed in cases where added implementation scope is minimal.
- Accessibility standards that relate to non-existent functionality in the app are marked N/A. In the event that the app's design changes to include relevant functionality, these standards will be candidates to prioritize as requirements.

Category	WCAG / 508 Section	Implementation Approach
Color	Color contrast (1.4.3_AA) (1.4.6_AAA)	Designs for the app should consider the following: Normal fonts (≥ 18px) • AA compliant: 4.5:1 • AAA compliant: 7:1 Large fonts (≥ 24px) • AA compliant: 3:1 • AAA compliant: 4.5:1
	Color (1.4.1_A)	Designs for the app should not use color as the sole conveyance of information.
Color	Non-text contrast (1.4.11_AA)	(2.1 requirement) Designs of UI components and graphical objects in the app designs that are used to understand the content should have a contrast ratio of at least 3:1.
Headings & Navigation	Heading levels (1.3.1_A)	Designs for each page should have only, and at least one h1 on the page. There are no skipped heading levels. (i.e. the headings don't jump from h1 to h3). Programmatically specify ARIA level for all text headings in React Native.
Headings & Navigation	Info and Relationships (1.3.1_A) (502.3.7) (502.3.8)	Leverage React Native accessible components so that information, structure, and relationships conveyed through presentation can be programmatically determined or are available in text.
Headings & Navigation	Tables (1.3.1_A) (502.3.3)	N/A - Assumption: Not seeing complex tables in the designs. If we need to pull in a fancy table then what we can build with react native list views, then we may need to pull in a third party library that is accessible and meets the designs. All tables should be programmatically identified and the table heading for

Color contrast requirements in design library

Primary Alt		
\$color-primary-alt	#02bfe7	✓ AA
\$color-primary-alt-lightest	#e1f3f8	✓ AAA
\$color-primary-alt-light	#9bdaf1	✓ AAA
\$color-primary-alt-dark	#00a6d2	
\$color-primary-alt-darkest	#046b99	✓ AA

Accessibility Implementation Guidelines

- Mark "mailing address" or "residential address" as Header 1

Mobile Alert

- Mark "Please confirm your address" as Header 2

You Entered Section

- Mark "You entered" as Header 2

Suggested Addresses Section

- Mark "Suggested addresses" as Header 2
- Addresses as a group (more than one address):
 - accessibilityRole= "radio group"
- Each individual address:
 - accessibilityLabel= Text
 - accessibilityRole= "radio"
 - accessibilityState= Denote when selected vs. unselected

Use this Address Button

- accessibilityLabel= "use this address"
- accessibilityHint= "Saves changes and navigates to the personal information page"
- accessibilityRole= "button"

Edit Address Button

- accessibilityLabel= "edit address"
- accessibilityHint= "navigates to the edit address page"
- accessibilityRole= "button"

Use this Address Button

- accessibilityLabel= "use this address"
- accessibilityHint= "Saves changes and navigates to the [personal information]/letters or documents page"
- accessibilityRole= "button"

Cancel Button

- accessibilityLabel= "cancel"
- accessibilityHint= "Cancels changes and navigates to the previous page"
- accessibilityRole= "button"

```
<Box mt={theme.dimensions.contentMarginTop} mb={theme.dimensions.contentMarginBottom}>
  <TextArea>
    <TextView variant="MobileBodyBold" accessibilityRole="header">
      {t( key: 'howDoIUpdate.ifEnrolledInVAHealth')}
    </TextView>
    <TextView variant="MobileBody" my={theme.dimensions.standardMarginBetween}>
      {t( key: 'howDoIUpdate.pleaseContactNearestVAMed')}
    </TextView>
    <TextView variant="MobileBodyBold" accessibilityRole="header">
      {t( key: 'howDoIUpdate.ifNotEnrolledInVAHealth')}
    </TextView>
    <TextView variant="MobileBody" mt={7} mb={20}>
      {t( key: 'howDoIUpdate.pleaseContactNearestVARegional')}
    </TextView>
    <TextView {...linkProps}>
      {...testIdProps(t( key: 'howDoIUpdate.findYourNearestVALocationAll'))}
      {...allyHintProp(t( key: 'howDoIUpdate.findYourNearestVALocationAll'))}
    </TextView>
  </Box>
```

Example of accessibility in React Native

4 **Health care**

View your appointments and send messages

5 **Letters**

Download common VA letters and documents

6 **Find a VA location**

7 **Home**

8 **Claims**

9 **Health**

10

Example of voice command QA

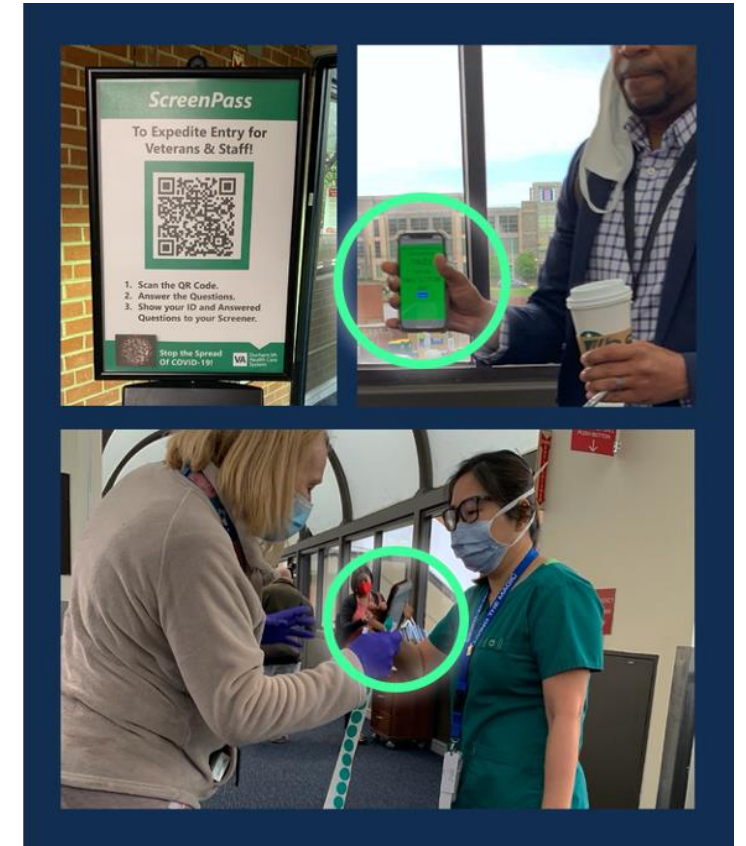
Mobile Accessibility Test Plan

Example of accessibility requirements in development backlog

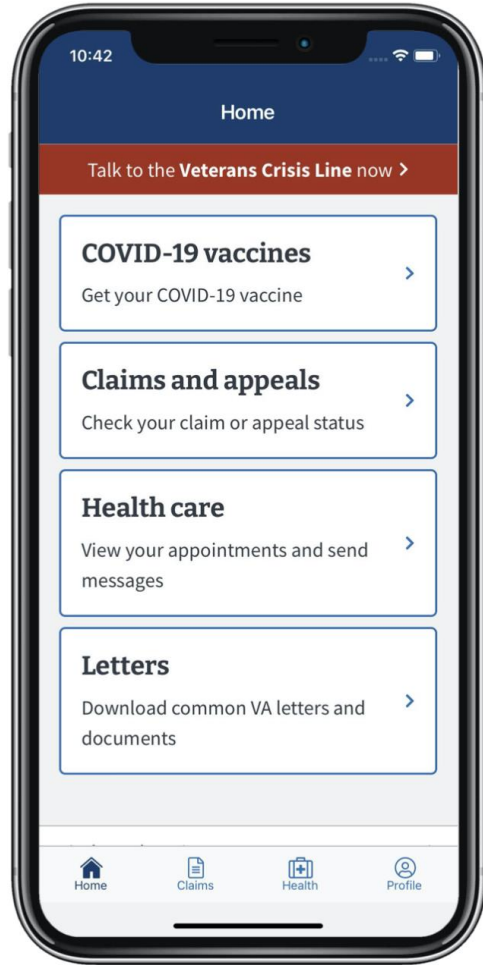
Example: COVID-19 Digital Screener

By choosing a typeface that the average user could read, we would be consciously alienate a section of our users and make it harder for our staff to review results.

By selecting a typeface that was workable for those who struggled to see or read their phone, we arrived at a choice that worked for everyone.



Example: VA Health & Benefits App



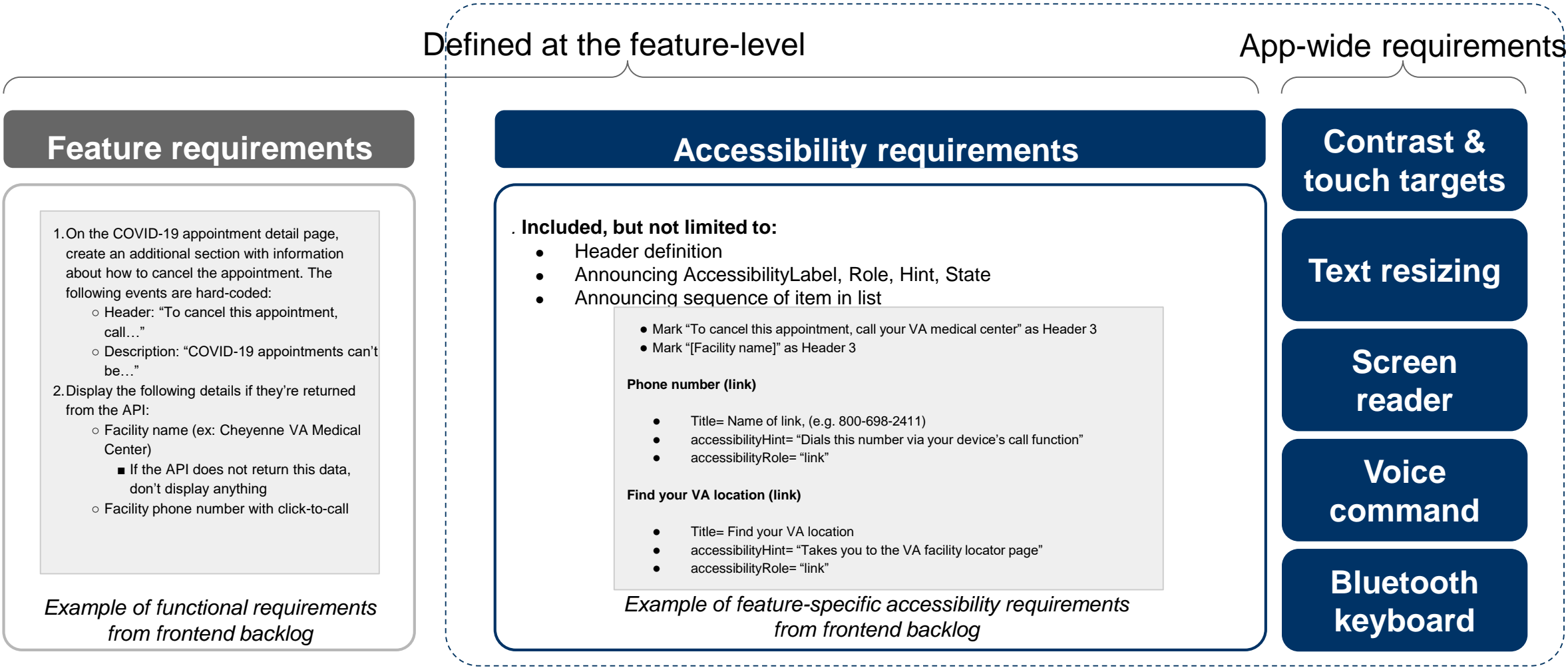
**VA Health & Benefits Mobile
App**

- Created by the VA Office of the CTO, Veterans Benefits Administration, Veterans Health Administration Office of Connected Care
- Designed with accessibility in mind from the start
- Based on existing VA design system with modifications for native mobile
 - Content takes the center stage
 - Generous font sizing
 - Go beyond guideline standards

Example: VA Health & Benefits App

Incorporate accessibility into development requirements

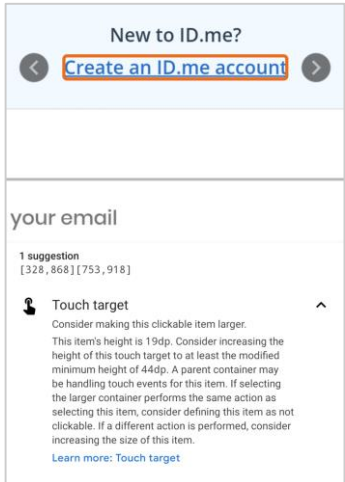
Accessibility requirements for dev & QA



Example: VA Health & Benefits App - accessibility testing

Contrast & touch targets

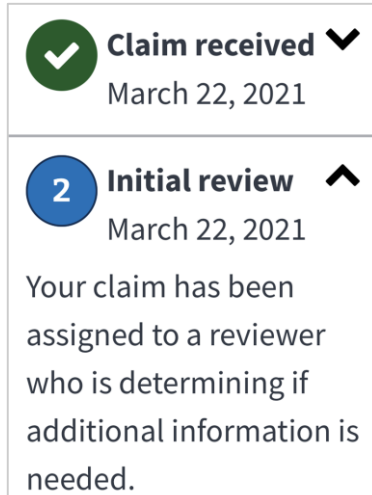
QA tools:
Google Accessibility Scanner app



Google Accessibility scanner identifies issue with touch target size

Text resizing

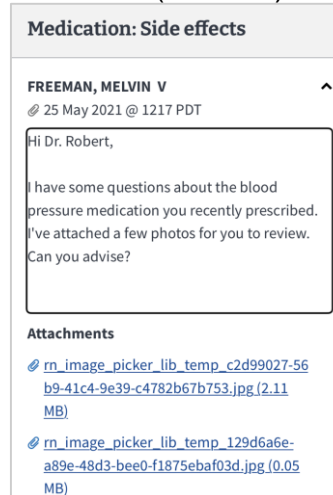
QA tools:
Text size control in the device Settings



Example of Claims detail page with larger text size enabled

Screen reader

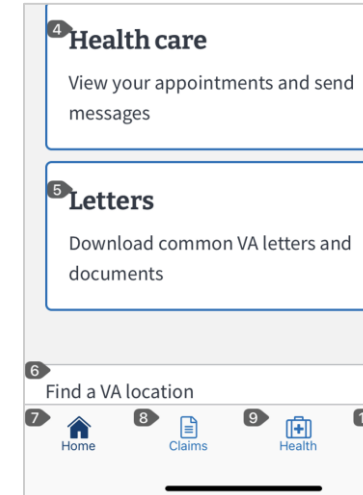
QA tools:
VoiceOver (iOS)
Talkback / Voice Assistant (Android)



Navigating with VoiceOver enabled, showing announced content in focus

Voice command

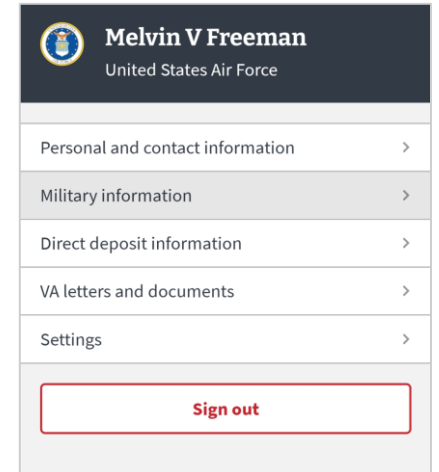
QA tools:
Voice Control (iOS)
Voice Access (Android)



Navigating with Voice Control and "show numbers" enabled

Bluetooth keyboard

QA tools:
Bluetooth keyboard



Navigating with a bluetooth keyboard, with Military information in focus

Principle Recap

1

Design better health care experiences *with* Veterans & their care teams, not *for* them.

2

Give VA staff the right data, at the right time, in the right format, and in the right context to help them deliver better health outcomes.

3

To create truly inclusive experiences, design for the person who is going to have the hardest time using what we build.

Final thoughts

- Veterans are a unique audience in the health care space because they receive both health benefits as well as other VA benefits such as disability and education.
 - Our team strives every day to provide a holistic experience where Veterans can accomplish everything, they need.
- Our team recognizes that a digital patient experience is only as strong as the clinical experiences, APIs, and data analytics foundations underneath them.
 - We strive to deliver actionable data at the point of care.

QUESTIONS?

DRAFT

