

## **UI-UX Design Rationale: SafeHaven Caregiver Application**

Bradley D. Saucier

Southern New Hampshire University

CS-319 UI/UX Design and Development

Professor Jasmine

February 1, 2026

## **Introduction and Design Philosophy**

SafeHaven is a mobile safety application for caregivers supporting a relative with dementia. The interface enables rapid scanning and low-friction response. It targets two time-critical risks: wandering beyond a safe boundary and a stove left on long enough to create fire risk. The design prioritizes reliability, speed to action, error prevention, and accessibility - critical factors for caregivers under fatigue and time pressure.

## **Screen-by-Screen Design Rationale**

### Care Circle Setup - Redundancy without unnecessary notifications

#### Purpose and function

The Care Circle Setup screen defines alert order and escalation timing. The backup is engaged only if the primary does not acknowledge in time.

#### Design rationale and customer benefit

Clear labels (Primary Contact, Backup Contact, Escalate) reduce setup errors that could cause missed alerts. Showing each contact method (text or call) prevents ambiguity. The escalation dropdown and Test Alert button support reliable coverage: the system engages the backup only when the primary does not respond, and caregivers can validate the configuration before a real event, supporting trust and reducing missed-notification risk.

#### Research support

This design reflects interview themes that escalation must match family roles and that trust determines adoption.

## Home Status Dashboard - Unified status view and data freshness

### Purpose and function

The Home Status Dashboard provides a single-screen summary of home safety. It communicates current safety state and data freshness, plus the areas requiring attention with direct navigation.

### Design rationale and customer benefit

The three-state status model (normal, caution, critical) supports quick interpretation and reduces information overload. The "Last Updated" timestamp serves as both a trust cue and a failure indicator, preventing false "safe" readings from stale or offline data. As a recommended improvement based on prototype feedback, the dashboard should make stale data unmistakable (for example, changing the timestamp styling and adding a short "Data may be outdated" message when updates stop). Tiles grouped by priority (wandering, wearable, stove) align with caregiver decision-making. Direct buttons (View Location, View Stove, Care Circle) shorten time to action.

### Research support

This design reflects interview findings that context prevents panic and that visible data freshness supports trust.

## Stove Risk Alert - Safety-critical escalation with intent verification

### Purpose and function

The Stove Risk Alert screen is a full-screen alert used when the stove reaches the critical threshold (stove on for 60 minutes). It displays the condition, duration, and supporting context ("No Motion Detected" with a timestamp) and provides response actions: Call Home, Mark Cooking, and Emergency Shutoff (press-and-hold).

### Design rationale and customer benefit

The screen facilitates rapid risk verification and action. Duration is prominent because time-on drives risk. The context block reduces false alarms by providing immediate supporting information rather than forcing guesswork.

### Key innovation

The design pairs a high-urgency alert with an immediate context signal (No Motion Detected) so caregivers can distinguish true risk from normal cooking activity faster than a typical alert that only reports "stove on."

### Error prevention and confirmation

Emergency Shutoff is a high-impact action, so press-and-hold is required to prevent accidental activation. The interface should provide closed-loop confirmation, including status updates such as "Shutoff sent" and "Shutoff confirmed," to reduce uncertainty during a critical event. As a recommended improvement based on prototype feedback, the press-and-hold control should include visible progress feedback (for example, a ring or bar that fills during the hold) so the caregiver can see that the command is being initiated.

### Research support

This screen reflects interview themes that false alarms are a primary barrier to adoption and that clear context and confirmation build trust.

## Wandering Alert - Rapid recovery with clear context and closure

### Purpose and function

The Wandering Alert screen is a full-screen alert used when the relative is out of the safe zone. It

displays the event type, location and distance, and time, with a map preview. It provides response actions: Navigate, Call, and Mark Safe.

#### Design rationale and customer benefit

The screen presents event context - what, where, and when - followed by actions. The map preview aids rapid orientation. The actions align with caregiver response: call to verify and navigate to recover. Mark Safe ends the alert loop and restores trust once the caregiver verifies the relative is safe.

#### Research support

This design reflects interview themes that context prevents panic and that the system must support efficient escalation and resolution.

### Cross-Screen Consistency

SafeHaven uses a consistent three-state model and information pattern (event - context - actions) across screens. Escalation is role-based: the system alerts the primary caregiver first and escalates to the backup only if the primary does not acknowledge in time. When an event is resolved, the system should notify the care circle to prevent duplicate responses and confusion. Consistency reduces cognitive load and improves response speed.

### Platform Adaptation

#### Digital watch adaptation (Wear OS)

The watch experience should support glanceability and triage, not configuration. To maximize glanceability, content should be short, high-contrast, and limited to the event plus one key detail, supported by strong haptic feedback. Watch actions should be limited to one-tap responses that

match caregiver intent (Call as primary, Open on Phone as secondary). Setup, detailed maps, and history should be deferred to the phone to keep the watch fast and time-saving.

#### Touch-based kiosk adaptation (large screen)

A kiosk version functions as a home command display for passive monitoring and rapid access during an event. It should increase typography and spacing for distance legibility, use a multi-panel layout for simultaneous monitoring, and keep navigation shallow. Touch targets should be larger to support older users and fast interaction. Because kiosks are shared, sensitive actions should require authentication, and high-impact actions should provide positive confirmation for every command sent. To maintain privacy in shared spaces, the kiosk should mask sensitive details (for example, full addresses, contact details, and detailed location history) until a caregiver completes authentication (for example, a simple PIN).

#### **Research Basis and Guideline Sources**

Design decisions reflect interview themes: reliability over features, context to prevent panic, role-based escalation, accessibility as safety-critical, and trust through visible status and confirmation. The design aligns with established platform and accessibility guidance, including Apple Human Interface Guidelines, Google Material Design, WCAG 2.2, and Wear OS design guidance.