

SPEC-08: Alden UI Module

1. Background

The **Alden UI Module** is a peer in the Hearthlink ecosystem, providing a focused dashboard for monitoring and interacting with core system components. It offers global navigation among modules, persistent controls, and specialized panels—Observatory, Diagnostics & Repair, Personality & Mood, and Interaction—without serving as an overseer of other modules.

2. Requirements (MoSCoW)

Must have

- Radial module navigation menu to switch between peer modules
- Persistent system controls: voice toggle, help access, accessibility options
- Responsive layout: supports 1024×768 minimum, multi-DPI, multi-monitor
- Persistent chat window for message input and transcript
- Accessibility compliance: keyboard navigation, ARIA landmarks, screen-reader support

Should have

- Dynamic panel sizing based on content density
- Light/dark theme toggle persisted per user preferences

Could have

- Keyboard shortcuts for panel switching (e.g., Ctrl+1 for Observatory)
- Drag-and-drop panel reordering

Won't have (this increment)

- Module launch or welcome flows (handled by system launcher)
- In-panel tutorials or guided onboarding

3. Method

Architecture Diagram

```
@startuml
package "Alden UI" {
    [RadialModuleNav] --> [PanelFrame]
    [SystemControlsBar] --> [PanelFrame]
    [PanelFrame] --> [PersistentChatWindow]
}
```

```
}
@enduml
```

Data Schema

```
@startuml
table AldenUIState {
+ user_id      : UUID [PK]
+ theme        : ENUM('light','dark')
+ last_panel   : VARCHAR
+ layout_pref  : JSON
+ updated_at   : TIMESTAMP
}
@enduml
```

4. UI Components & Wireframes

4.1 Radial Module Navigation

```
[ Hearthlink Glyph ]
  *
  * * *
  * Alden Alice Synapse *
  * Vault Sentry Mimic *
  *
```

Component	Function	Data/API Call
RadialModuleNav	Displays peer modules in an arc; onClick navigates module	POST /ui/navigate { moduleId }

4.2 System Controls Bar

```
[Voice][Help][Accessibility] [Theme Toggle]
```

Component	Function	Data/API Call
VoiceToggleButton	Toggle voice input mode	PUT /user/preferences/voice
HelpButton	Opens help modal	N/A
AccessibilityButton	Opens accessibility settings modal	GET/PUT /user/preferences/accessibility

Component	Function	Data/API Call
ThemeToggleButton	Switch between light/dark theme	PUT /user/preferences/theme

4.3 Observatory Panel

```
+-----+
| Observatory                               |
| Tabs: [Live Feed] [Metrics]              |
|                                           |
| [Real-time telemetry graph or table view] |
+-----+
```

Sub-Component	Function	Data/API Call
LiveFeedTab	Streams live events (redraws on each update)	GET /sentry/events/stream
MetricsTab	Shows aggregated metrics (charts, counters)	GET /observatory/data
TelemetryChart	Renders data using Recharts for trends	Data from metrics API

4.4 Diagnostics & Repair Panel

```
+-----+
| Diagnostics & Repair                     |
| Buttons: [Run Diagnostics] [Repair Actions] |
|                                           |
| [Diagnostic logs output area]             |
+-----+
```

Sub-Component	Function	Data/API Call
RunDiagnosticsButton	Initiates system diagnostics	POST /diagnostics/run
RepairActionsList	Lists available repair actions with status	GET /diagnostics/actions
LogsOutputPane	Streams real-time diagnostic logs	GET /diagnostics/logs?session={id}

4.5 Personality & Mood Panel

```
+-----+
| Personality & Mood                       |
|                                           |
+-----+
```

```
| [Mood Indicator: 😊/😐/😞 ] [Trait Overview] |
|
| [Editable list of persona traits and weights] |
+-----+
```

Sub-Component	Function	Data/API Call
MoodIndicator	Shows current persona mood via icon	GET /mimic/personas/{id}/traits
TraitListEditor	Editable list for traits; inline JSON-schema validation	PUT /mimic/personas/{id}

4.7 Full-Screen Wireframes

Alden Main Screen Full Wireframe

```
+-----+
+
|                                     Hearthlink Radial
Nav                                     |
|                                     (Centered Top: 7-icon downward
arc)                                  |
|-----|-----|-----|-----|-----|-----|-----|
| [Voice] [Help] [Accessibility]                                     (top-
right) |
|-----|-----|-----|-----|-----|-----|-----|
|
|
|
| +-----[ Panel Frame ]-----+
+
| | [ Observatory ] [ Personality & Mood ] [ Interaction ]
| |
| | [ Cognition & Memory ] [ Diagnostics & Repair ]
| |
| | (Panels sized per info density; adaptive layout)
| |
| +-----+
+
|
|
| [ Chat Input/Transcript: Persistent at Bottom, outside panel
frame ]
+-----+
+
```

Panel Expansion Example

```
+-----+
+
|                               Alden Panel: Observatory
(Expanded)                      |
+-----+
| [Close] [Live Feed] [Metrics]
X |
+-----+
|
|
|
| [Full-width data visualization or log table occupies multi-column
span]
|
|
+-----+
+
```

5. API Endpoints API Endpoints API Endpoints

Method	Path	Description	Auth Scope
POST	/ui/navigate	Switch to another module	ui.navigate
GET	/user/preferences	Retrieve user UI preferences	user.prefs.read
PUT	/user/preferences	Update user UI preferences	user.prefs.write
GET	/alice/sessions/{id}/messages	Load chat history	alice.message.read
POST	/alice/sessions/{id}/messages	Send chat message	alice.message.write

6. Implementation

- 1. Integrate RadialModuleNav and SystemControlsBar into React/Tailwind codebase.
- 2. Implement adaptive CSS Grid for PanelFrameContainer and responsive behaviors.
- 3. Develop Chat components linked to Alice APIs.
- 4. Persist AldenUIState through user preferences service.
- 5. Conduct WCAG 2.1 AA accessibility audit.
- 6. Write unit and E2E tests for navigation, theming, and chat flows.

7. Milestones

Milestone	Timeline	Owner
RadialNav & Controls Setup	Week 1	Frontend Team

Milestone	Timeline	Owner
Panel Layout & Responsiveness	Week 2	Frontend Team
Chat Window Integration	Week 3	Full-stack Team
Accessibility & Theming	Week 4	Accessibility Lead
Testing & QA	Week 5	QA Team

8. Gathering Results

- Module navigation latency <100 ms.
- UI preferences persisted correctly across sessions.
- Responsive layout verified at 1024×768 and multi-DPI.
- Accessibility compliance at AA level.

9. Dynamic & Responsive Rules

- **Panel sizing:** Each panel adjusts its grid span based on content density (e.g., Diagnostics spans two columns when showing logs).
- **Breakpoints:** At viewport widths <800 px, panels stack vertically; chat and controls remain fixed.
- **Animation timing:** Radial menu opens with a 200 ms ease-out fade and 150 ms option slide.
- **Z-ordering:** SystemControlsBar and PersistentChatWindow always overlay panels; modals appear above all.

10. References & Dependencies

- **UI Blueprints:** appendix_c_ui_blueprints.md
- **Integration Blueprints:** appendix_b_integration_blueprints.md
- **CSS Guidelines:** include spacing/typography tokens from design system
- **Accessibility Guidelines:** VOICE_ACCESS_POLICY.md sections on UI
- **DevOps Guide:** _DEVELOPMENT_OPERATIONS_GUIDE.md