This **Design Basis Report (DBR)** focuses on the **Frontend User Interface (UI)** for the unified home automation platform. The UI is designed to be a high-performance, white-label Progressive Web App (PWA) that dynamically adapts its visual identity between **ATS** and **Manara** while providing professional-grade controls for KNX and Zigbee systems.

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1. UI System Overview

- **Framework:** React.js or Flutter Web (optimized for mobile-first interaction).
- **Design Philosophy:** "Complexity Hidden, Power Accessible." The UI must feel like a premium consumer app while retaining integrator-level diagnostic transparency.
- **Primary Target Devices:** Motorola Edge 50/60 Pro (Mobile), Wall-mounted Tablets (Kiosk), and Desktop (Integrator View).

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2. Multi-Tenant Branding Engine

The UI will not be hard-coded for one brand. Instead, it will fetch a **Theme Definition File** from the backend upon authentication.

2.1 Brand-Specific UI Specs

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3. Core Functional Modules

3.1 Adaptive Dashboard

- **Dynamic Room Cards:** Cards that change color or "glow" based on the brand's accent color when a device is active.
- **Quick Actions:** A "Favorites" bar at the bottom for high-frequency toggles (Main Gate, Living Room Lights).
- **Long-Press Menus:** For granular control (e.g., long-press a light to open the Kelvin/Dimming slider for KNX/Zigbee).

3.2 Connectivity & Performance (ACE Integration)

- **Latency Indicators:** A subtle "Network Pulse" icon in the header.
    - **Green:** Local (Ultra-Low Latency).
    - **Blue:** Remote/VPN (Tailscale/WireGuard active).

    - **Orange:** Cloud Fallback (Sync Delay).
- **Optimistic UI:** When a user toggles a switch, the UI updates instantly, then reverts only if the backend reports a failure (minimizing perceived lag).

3.3 Access-Policy Rendering

- **Conditional Visibility:** The UI only renders components authorized by the Backend IAM.
    - *Example:* If a Tenant (Dr. Febi Cherian) logs in, the "Settings," "Server Room," and "Main Gate" tabs are hidden from the DOM entirely.

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4. Diagnostic & Sentinel Overlay (Integrator Mode)

For the ATS/Manara technical teams, a "Sentinel View" can be toggled via a hidden gesture or admin login.

- **Bus Traffic Visualizer:** A real-time sparkline graph showing KNX telegram frequency.
- **Health Badges:** Each room card shows a small health dot (Green = OK, Yellow = Anomaly/High Z-Score).
- **Log Console:** A slide-over panel showing live debug logs from the Python Sentinel backend.

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5. User Experience (UX) Standards

- **Navigation:** Bottom-tab navigation for primary sections (Home, Rooms, Scenes, Security).
- **Haptic Feedback:** Native-feel haptics for Motorola Edge devices when a command is sent.
- **Kiosk Mode:** A "Locked" state for wall tablets that prevents exiting the app or accessing Android/iOS system settings.

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6. Technical Deliverables

1. **Global Theme Provider:** A React Context or Flutter Theme extension that consumes the brand JSON.
2. **WebSocket Client:** A persistent connection handler that manages session resumption during network handovers.

3. **Asset Library:** SVGs for ATS and Manara logos, custom icon sets for home automation entities.