

Per Diem Digital Signage Module

Browser-Based | Cloud-Native | Solana-Integrated (for PoX & Rewards) | Dashboard-Embedded

I. Purpose

To develop a **modular, browser-accessible Digital Signage system** within the Per Diem dashboard that enables merchants to schedule, display, and manage digital content across locations and verticals, including:

- Hospitality: Lobby welcome displays, guest itineraries, amenity features
- Food Service: Menu boards, promotional banners, PoX campaign triggers
- Retail: Product highlights, limited drops, event countdowns
- Health & Beauty: Service specials, room availability, staff introductions
- Events: Wayfinding, branding loops, agenda boards

The module will support:

- **Real-time content scheduling and deployment**
- **Customizable templates by venue type**
- **Optional NFT minting triggers for customer engagement**

- **Solana-native payment and token reward overlays (modular)**
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II. Core Features

1. Display & Device Management

- Register and name signage devices
- Assign to location/venue/zone
- Monitor online/offline status and content playback logs

2. Content Library

- Upload images, video, HTML snippets
- Cloud-hosted storage with CDN delivery
- Tagging and folder organization
- Version control and scheduling metadata

3. Playlist & Scheduler

- Drag-and-drop playlist builder
- Calendar-based scheduling by device or group
- Override & emergency broadcast capability
- Loop, interval, and duration configuration

4. Template Engine

- Modular templates for menus, ads, event lists
 - Zone-based layout editor (image, ticker, QR block, video window)
 - Real-time preview before publishing
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III. Solana Blockchain Integration (Optional)

All blockchain interactions are **exclusive to Solana** and remain **modular**—non-blockchain users operate without change.

A. PoX-Driven NFT Minting

- QR codes on digital signage can link to PoX experiences
- NFTs minted using **Solana + Metaplex Bubblegum** for:
 - Limited badge drops
 - Location-verified interactions
 - Guestbook-style memory keepsakes

B. Token Overlay Features

- Trigger visual cues when users redeem \$PER, \$GRUB, \$MERCH, etc.
- Integrate signage response with wallet scans or on-premise transactions

- Smart contract-minted offers: e.g., “Scan to Earn”, “Mint for Discount”
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IV. 🧩 Application Architecture

Layer	Description
Frontend	React + Tailwind UI, responsive admin interface
Backend	Node.js (REST + GraphQL), PostgreSQL metadata store
Player App	Lightweight Electron/HTML5 app for devices
Blockchain	Solana smart contracts, Anchor-based with Solana Pay or QR support
NFT Engine	Metaplex Bubblegum + Helius API
Wallet Support	Phantom, Solflare, Backpack for rewards triggering
Infra	AWS/GCP deploy, Redis cache, CDN (Cloudflare)

V. ✂ Integration & Extensibility

- **POS Wrappers:** Show product or experience highlights based on menu/inventory data

- **Per Diem Loyalty & Booking Modules:** Trigger screen content on service milestones or NFT minting
 - **Signage SDK:** Embedded player version for kiosks, web widgets, or custom installations
 - **Third-Party Compatibility:** Works with Android sticks, Raspberry Pi, Fire TV, commercial signage displays
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VI. Optional Smart Features

- AI scheduling: Optimize ad placement based on traffic/time
 - Dynamic content switching triggered by token usage or user tier
 - QR-activated perks with randomized NFT surprise drops (“Mint & Win”)
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VII. Security & Compliance

- Device key registration with encryption handshake
- Encrypted content delivery over HTTPS
- Playback logs hashed for blockchain-based verification (for ad claims)
- GDPR/CCPA-ready content personalization (if applicable)

VIII. Analytics & Insights

- Device uptime and content playback logs
 - QR scans and NFT mint engagement rates
 - Token usage vs signage conversion
 - User heatmaps by display location or campaign
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IX. Implementation Roadmap

Phase	Milestone
1. MVP	Device registration, content manager, playlist scheduling
2. NFT Campaign Tools	PoX QR trigger & mint viewer
3. Wrapper Sync	Pull dynamic content from Food, Lodge, Merch wrappers
4. Analytics Engine	Scan rates, drop rates, screen impact reports
5. Offline Mode	Device cache, fallback sync logic

X. 🎁 Deliverables

- Dashboard signage module for Per Diem admin UI
 - Device-side signage player app (HTML/JS or Electron)
 - NFT minting interface (QR generator)
 - Solana-based smart contract set for token + PoX interactions
 - API docs for 3rd party integrations (CMS, devices)
 - Playlist templates for multiple verticals
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XI. 🧬 Alignment with Per Diem's Vision

Experience Layer	Solana-Based Benefit
Experiential Commerce	Users scan signage to unlock token/NFT rewards
Memory & Presence	PoX NFTs minted through in-venue display engagement
Creative Expression	Artists and brands distribute verified display NFTs
Real-World Interaction	Physical signage bridges to on-chain identity & action

Would you like a visual component map, screen mockups, or a pitch deck version of this module for stakeholder presentation?