**1) Information Architecture (tabs, routes, and what each shows)**

**Primary tabs (top or left rail) and their core responsibilities:**

* **Live Operations** (default): KPIs (Orders Today, Auto-ALLOW %, Review, Blocked), prioritized triage queues (“Requiring Immediate Action”), bulk actions (resolve/assign/escalate/simulate), and one-click evidence export. Include filters for order/delivery/PO, jurisdiction, product/ECCN/HS, entity, severity; right-side “WHY/FIX” drawer showing rule IDs & sources.

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* **License Hub**: License cards with validity/expiry, counter/quota usage bars, 80/90% depletion alerts, reserve/release actions, and jurisdiction views.

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* **Rules Lab**: Low-code rule builder (IF/THEN), rule list with versions, draft→shadow→canary→prod lifecycle controls, simulation panel (run on last 90 days), rollback.

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* **Master Data**: Products/Materials (HS, ECCN, origin, BOM % for de-minimis), Parties/Customers (DUNS/LEI, addresses, SPL status, risk score). Bulk import (ERP/CSV), dedupe, mapping ECCN↔HS.

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* **Documents**: Upload/OCR status list, document viewer, versions, tags, link to orders/licenses, retention badges (5–7y).

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* **Audit Vault**: Immutable timeline (who/when/why), search by Audit ID, filter by date/user/decision, export PDF/CSV “evidence pack”.

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* **Settings & Integrations**: Tenant entities/jurisdictions, SSO/MFA, RBAC/ABAC role matrix, residency/retention, SAP/NetSuite/Salesforce connectors, webhook subscriptions.

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**2) UX patterns & interactions (how it should feel)**

* **Data-dense, minimal, enterprise-clean** layouts; every KPI/number is clickable for drill-down. **WHY/FIX** drawers appear contextually from rows.

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* **Bulk triage**: multi-select rows → resolve/escalate/assign; inline toasts confirm actions; action requires reason notes when escalating.

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* **Simulation everywhere**: from queues or rule builder, open a modal: show before/after decision, rules fired, quotas affected.

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* **License counters**: progress bars for quota usage; expiry timeline widget with alert thresholds (e.g., 90/60/30 days).

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* **Global search/command bar** for Order ID, Audit ID, Partner, License; fast autocomplete. Target p95 300 ms cached.

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* **Onboarding wizard & tooltips** for complex fields; in-app help and AI tips.

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* **Accessibility first**: keyboard nav, focus rings, ARIA labels, high contrast option (WCAG 2.2 AA).

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**3) Component inventory (what to build)**

**Foundations**

* **Design tokens** (color, spacing, radius, shadows, typography), **responsive grid**, **form primitives** (text/select/date, entity pickers with async search), **toast/snackbar**, **modal/drawer**, **tabs**, **tables** (virtualized), **empty states/zero results**. (Targets for LCP/INP are in NFRs.)

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**Live Operations**

* KPI tiles with trend sparklines; Triage Table (columns: Severity, Order/Delivery/PO, Jurisdiction, Product/ECCN/HS, Party SPL status, Decision, Age, Assignee); Bulk Action Bar; **WHY/FIX Drawer** (rule IDs, sources, suggested fix steps); Quick filters & saved views.

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**License Hub**

* License Card (jurisdiction, validity, usage), Quota Bar, Expiry Timeline, Reserve/Release dialog.

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**Rules Lab**

* Rule List (status chips: draft/shadow/canary/prod), Rule Editor Canvas (conditions/actions/priority), Version history & rollback, **Simulation Panel** (dataset selector, diff), **Deploy flow** with 4-eyes approval.

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**Master Data**

* Product grid (HS/ECCN/origin/BOM%), Party grid (type, SPL, risk score), editors with validation; CSV importer with duplicate detection.

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**Documents**

* Upload widget (drag-drop + email/ERP ingest status), OCR progress, Version list, Metadata tags, Linkage chips to orders/licenses, Retention badges.

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**Audit Vault**

* Timeline (event icons: auth, rule deploy, determination, export), Filters, Evidence Pack builder (select scope → PDF/CSV).

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**Settings & Integrations**

* RBAC roles + **ABAC** policies (region, BU, customer group) controls, SSO/MFA setup, residency/retention toggles, connector catalog (SAP/NetSuite/SFDC), webhook subscriptions UI.

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**4) Data & state strategy (how the UI talks to API v1)**

* **API base**: /api/v1, OAuth2/OIDC, Idempotency-Key on POST, pagination via limit/offset, standard error schema with trace\_id for toasts/logs.

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* **Key endpoints UI consumes**:  
  POST /determine, POST /simulate, GET/POST /rules(+/deploy), GET/POST /masterdata/products|parties, GET/POST /documents, GET /sanctions/sources, POST /webhooks/subscriptions.

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* **Client state**: Use a query library (cache, revalidation, optimistic updates) for lists (queues, rules, master data) and a global store for user/session/role, feature flags, and layout preferences.
* **ABAC at UI**: feature guards (hide/disable) based on role + attributes (region/entity). **Never rely on front-end alone;** server enforces final authorization.

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* **Real-time**: subscribe to webhooks via a lightweight notifications service (or SSE/socket) to refresh queues and rule statuses after deploys.

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**5) Performance, reliability, and observability (front-end targets)**

* **Perf budgets**: Initial dashboard **LCP ≤ 2.5 s** (3G Fast), **INP ≤ 200 ms** desktop; autocomplete p95 ≤ 300 ms (cached). Use route-level code-splitting, component virtualization for large tables, and prefetch on hover.

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* **Resilience**: Standard error surface with retry/backoff for list loads; “toast + details” using error’s trace\_id. Offline-tolerant form buffering for long edits.

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* **Client telemetry**: emit UX metrics and API spans (trace IDs) to correlate with backend logs/traces. SLO widgets visible in Settings/Audit per Sprint-0 acceptance.

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**6) Security & privacy in the UI**

* **SSO/MFA flows** integrated; session timeout warnings; mask/download guards for sensitive exports; “Reason for access” on high-risk data. Log permission changes and exports; route all security events to SIEM.

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* **Tenant isolation** surfaced in UI (tenant badge in top bar), and per-tenant locale/residency indicators.

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* **Data minimization** UI: show only necessary fields; redaction chips for masked fields under ABAC.

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**7) Internationalization & accessibility**

* **Locales** (en-US, en-GB, de-DE, fr-FR, es-ES, pt-BR, it-IT, ja-JP); ICU formats for numbers/dates/currency; RTL-ready. Provide language switcher in profile menu. **WCAG 2.2 AA**: contrast, focus, keyboard, ARIA, skip-to-content, and table semantics.

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**8) Extensibility (plugins) & docs**

* **Rules plugins** (read-only, deterministic) surfaced in Rules Lab with capability badges; **report plugins** selectable in Audit Vault. Version pins and tenant-level enable/disable toggles. Provide **Developer Portal** link in Settings.

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**9) Testing strategy (front-end)**

* **Unit** (component tests for tables, drawers, forms), **integration** (API contract mocks for Rules/Determine), **a11y** (axe), **i18n** snapshots (all locales), **E2E** (Cypress/Playwright for triage, deploy, simulate happy paths), and **performance** (Lighthouse CI targeting the NFR budgets).

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**10) Build order & deliverables (what to ship first)**

**Sprint 0 — Scaffolding**

* App shell with SSO; role/ABAC guards; design tokens; route skeletons for all tabs; i18n keys externalized; RTL smoke test; telemetry wired. **Definition of done aligns with your Sprint-0 acceptance.**

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**Milestone 1 — Live Ops**

* KPI tiles, Triage Table (virtualized), WHY/FIX Drawer, filters, bulk actions, global search. Perf budget in CI.

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**Milestone 2 — Rules Lab + Simulation**

* Rule list/editor, versioning, draft→shadow→canary→prod buttons, Simulation Panel (diff view), rollback.

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**Milestone 3 — License Hub**

* License cards, quotas, expiry timeline, reserve/release flows, alerts.

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**Milestone 4 — Master Data & Documents**

* Products/Parties grids + editors + CSV import; Documents/OCR page with versions and links.

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**Milestone 5 — Audit Vault & Settings**

* Timeline, evidence export; Settings for SSO/MFA, roles/ABAC, residency/retention, connectors, webhooks.

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**Tech choices (recommended)**

* **React + TypeScript**, **React Router**, query lib (SWR/React Query), **virtualized tables**, **zod** for client validation, **playwright** for E2E.
* **Design system**: headless primitives + your tokens; adhere to the NFRs and a11y standards. Targets and security/i18n constraints are already defined in your addendum.

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