

EIPL Terminal Ops

Features, Roles, and Flowcharts

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1. Application Summary

EIPL Terminal Ops is a multi-role terminal operations platform for LPG/POL/Chemical movements. It covers:

- Booking and scheduling
- Trip and gate lifecycle
- Yard and bay/arm assignment
- Safety, incidents, and stop-work control
- Document compliance and verification
- Reports, audit, and notifications
- Real-time operations and forecasting
- Collaboration (communications/tasks)
- EIPL Assist (live AI + operational fallback)

Primary code references:

- `src/app` (UI pages + API routes)
- `src/lib/rbac.ts` (legacy permission map + role nav)
- `src/lib/auth/permissions.ts` (canonical permission constants)
- `prisma/schema.prisma` (role enums + core lifecycle enums)

2. Role Catalog

Roles from `prisma/schema.prisma`:

- `SUPER_ADMIN`
- `TERMINAL_ADMIN`
- `CLIENT`
- `TRANSPORTER`
- `SECURITY`
- `SURVEYOR`
- `HSE_OFFICER`
- `AUDITOR`
- `TRAFFIC_CONTROLLER`

Default home routes from `src/lib/rbac.ts`:

- `SUPER_ADMIN` -> `/dashboard`
- `TERMINAL_ADMIN` -> `/dashboard`
- `CLIENT` -> `/dashboard`
- `TRANSPORTER` -> `/transporter/trips`
- `SECURITY` -> `/security/gate`
- `SURVEYOR` -> `/dashboard`

- HSE_OFFICER -> /hse
- AUDITOR -> /audit-logs
- TRAFFIC_CONTROLLER -> /controller/console

3. Feature Inventory (Module-wise)

3.1 Core Operations and Planning

- Dashboard: /dashboard
- Bookings: /bookings, /bookings/new, /bookings/[id]
- Schedule: /schedule
- Transporter trips: /transporter/trips, /transporter/trips/[id]/qr
- Controller Console: /controller/console
- Yard Console: /controller/yard-console
- Live Ops: /live-ops
- Forecast: /forecast

Key APIs:

- /api/bookings, /api/bookings/[id], /api/bookings/stats
- /api/bookings/[id]/schedule
- /api/bookings/[id]/assign-arm
- /api/truck-trips, /api/truck-trips/[id]/qr
- /api/controller/state
- /api/controller/apply-assignment
- /api/controller/bay-action
- /api/controller/reclassify
- /api/controller/update-eta
- /api/loading-arms
- /api/live/movements
- /api/forecast

3.2 Gate and Security

- Gate operations page: /security/gate

Key APIs:

- /api/gate/scan
- /api/gate/check-in
- /api/gate/check-out
- /api/gate/today
- /api/gate-pass/process

3.3 Safety and HSE

- HSE dashboard: /hse
- Incident pages: /hse/incidents, /hse/incidents/new, /hse/incidents/[id]
- Incident report shortcuts: /hse/incidents/report, /incidents/report
- Protocol page: /hse/protocols/gas-leak

Key APIs:

- /api/safety/checklists
- /api/safety/stop-work
- /api/safety/stop-work/[id]/resolve
- /api/incidents
- /api/incidents/[id]
- /api/incidents/[id]/close

3.4 Documents and Compliance

- Client document upload: /client/documents
- Admin/surveyor review: /admin/documents-review

Key APIs:

- /api/documents
- /api/documents/upload
- /api/documents/[id]/verify
- /api/documents/[id]/reject
- /api/trips/[id]/evaluate-gates
- /api/trips/[id]/transition-stage
- /api/trips/[id]/generate-evidence-pack

3.5 Reports, Audit, and Intelligence

- Reports: /reports
- Audit logs: /audit-logs

Key APIs:

- /api/reports/bookings
- /api/reports/movements
- /api/reports/safety
- /api/reports/bay-utilization
- /api/audit-logs
- /api/intelligence/executive-briefing
- /api/inventory/summary

3.6 Communications and Tasks

- Communications workspace: /communications

Key APIs:

- /api/comms/conversations
- /api/comms/conversations/[id]
- /api/comms/conversations/[id]/messages
- /api/comms/conversations/[id]/members
- /api/comms/conversations/[id]/read
- /api/comms/conversations/[id]/stream
- /api/comms/conversations/unread-counts
- /api/comms/mentions/search
- /api/comms/context-search
- /api/comms/tasks

- /api/comms/tasks/[id]

3.7 Assist and AI

- Embedded assistant widget (global)
- Communications drawer assistant

Key APIs:

- /api/chat (structured EIPL Assist response, live/fallback mode)
- /api/chat/ops
- /api/health/assist
- /api/ai/upload
- /api/ai/plan
- /api/ai/ocr

3.8 Platform and Admin Support

- Login: /login
- Notifications: /notifications
- Settings: /settings
- Forms: /forms, /forms/[formType]
- Support contacts: /contacts/control-room, /support/contact

Key APIs:

- /api/auth/[...nextauth]
- /api/notifications
- /api/forms/extract
- /api/forms/submit
- /api/dashboard/stats
- /api/lookup/* (bays, clients, products, terminals, timeslots, transporters)
- /api/v1/tenants/me
- /api/v1/appointments
- /api/v1/webhooks
- /api/health
- /api/cron/digest

4. Role-to-Feature Matrix (Operational View)

Legend:

- Full = end-to-end operate/manage
- View = read/list only
- Limited = role-scoped subset
- No = not intended path

Role	Bookings	Trips	Gate Ops	Yard/Controller	HSE	Documents	Reports	Audit	Forecast/Live Ops	Comms	Assist
	---	---	---	---	---	---	---	---	---	---	---
SUPER_ADMIN	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
TERMINAL_ADMIN	Full	Full	View/Manage	Full	Full	Full	Full	Limited	Full	Full	Full
TRAFFIC_CONTROLLER	View	View	View	Full	Limited	View	Limited	No	Full	Full	Full
HSE_OFFICER	View	View	Limited	Limited	Full	View	Full	Limited	Limited	Full	Full
SECURITY	View	View	Full	Limited	Incident create/read limited	Limited	No	No	Live Ops allowed	Full	Full

SURVEYOR	View	View	View	No	View	Verify/Reject	Full	No	Limited	Full	Full
AUDITOR	View	View	View	No	View	View	Full	Full	Forecast allowed	Read-heavy	Full
CLIENT	Create/Update own	No direct ops	No	No	No	Upload/View own	No	No	No	Full	Full
TRANSPORTER	View	Full (own)	No	No	No	Upload (role-scoped)	No	No	No	Read/limited write	Full

Source of truth:

- src/lib/rbac.ts
- src/lib/search-routes.ts
- Per-route guards in src/app/api/**/route.ts

5. End-to-End Flowcharts

5.1 High-Level User/System Flow

flowchart TD

```
A[User Login] --> B[Role + Tenant Resolution]
B --> C{Authorized?}
C -- No --> D[401/403 Response]
C -- Yes --> E[Role Dashboard/Module]
E --> F[Read/Write via API]
F --> G[RBAC + Tenant Guard]
G --> H[DB Update/Fetch]
H --> I[Notifications/Audit]
I --> J[UI Refresh]
```

5.2 Booking-to-Exit Operational Lifecycle

flowchart LR

```
A[Booking Created] --> B[Client Approved]
B --> C[Ops Scheduled]
C --> D[Truck Trip Created]
D --> E[Gate Check-In]
E --> F[Safety + Document + Stop-Work Gate Evaluation]
F -->|Pass| G[Ready For Bay]
F -->|Fail| X[Blocked: Action Required]
G --> H[Arm/Bay Assignment]
H --> I[Loading Started]
I --> J[Loading Completed]
J --> K[Weigh-Out + Sealing]
K --> L[Custody Transferred]
L --> M[Gate Check-Out / Exited]
```

5.3 Compliance Gate Decision Flow

flowchart TD

```
A[Trip Evaluate Gates API] --> B{Safety Checklist Passed?}
B -- No --> Z1[Block: SAFETY]
B -- Yes --> C{Mandatory Docs Verified?}
C -- No --> Z2[Block: DOCUMENTS]
C -- Yes --> D{Active Stop-Work Exists?}
D -- Yes --> Z3[Block: STOP_WORK]
D -- No --> E[Mark Ready For Bay]
E --> F[Allow Assignment + Next Stage]
```

5.4 Document Workflow (Client to Verification)

flowchart TD

```
A[Client/Transporter Upload Doc] --> B[/api/documents/upload]
```

B --> C[Document Status: PENDING]
C --> D[Terminal Admin/Surveyor Review]
D -->|Verify| E[Status: VERIFIED]
D -->|Reject| F[Status: REJECTED + Reason]
E --> G[Compliance Gate Re-evaluation]
F --> H[Client Re-upload]
H --> C

5.5 EIPL Assist Runtime Flow (Live + Fallback)

flowchart TD

A[User Message] --> B[/api/chat]
B --> C[Auth + Role + Intent + Snapshot]
C --> D{OpenAI Structured Response OK?}
D -- Yes --> E[Live Response]
D -- No --> F[Operational Fallback Builder]
F --> G[Role-Aware Actions + Metrics]
E --> H[Persist ChatLog]
G --> H
H --> I[UI Card: Live/Fallback Badge]

6. Notes on Access Control and Data Safety

- All APIs are server-side guarded (not only UI hidden links).
- Role restrictions are applied both at route level and data scope level.
- CLIENT and TRANSPORTER get scoped views for booking/trip/document access.
- x-tenant + middleware subdomain/header strategy isolates tenant context.
- Audit and notification events are generated across key operational actions.

7. Recommended Operating Documentation Pack

If you want a complete handover set, keep these 4 docs together:

1. This file: docs/app-features-flow-roles.md
2. Runbook: deployment, env, incident recovery
3. API contract: endpoint request/response examples by module
4. SOP mapping: business SOP -> app action mapping (HSE, gate, compliance)