

ROIS Crew Solution Introduction

v2026

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ROIS Crew Overview



About Us: Resource Optimization Intelligent Solutions (ROIs)

Led by a team with 20+ years of industry experience

Extensive global aviation knowledge

Experience at major airlines and global tech companies

Driving innovations in AI & Operations Research

\+ Strategic Partner with Lufthansa Systems

Established in 2014

Our Global Presence:



\+ Trusted by 40+ Aviation Clients

ROIS Crew Customers

Customers Adopt ROIS Crew Systems



ROIS Crew Advantage: an End-to-End Intelligent Crew Management

COMPREHENSIVE MODULE SUITE

- **Pairing Optimization**
- **Roster Optimization**
- **Crew Portal + PBS**
- **Day of Ops Tracking**
- **Training Management**

MARKET-LEADING PERFORMANCE

Solver Speed

< 5 mins

Pairing Optimization Runtime

< 60 mins

Roster Optimization Runtime

Roster Coverage

> 99%

Minimizes open time and manual intervention

Holistic Roster Optimization

- Flight
- Days Off (DO)
- Reserve
- Standby
- Bid Preferences

Comprehensive Training

Seamlessly integrates full-lifecycle training schedules (initial, recurring, upgrade, and conversion) directly into crew rosters

Fully Automated AICD

CREW EXPERIENCE MODULE

Intelligent PBS & Self-Service Portal

Comprehensive Bidding Engine

Flight Bidding

Bid on specific routes, layovers, and equipment preferences

Days Off (DO)

Submit guaranteed DO requests & pattern preferences

Crew Preference

Avoid early starts, maximize weekends, specific crew pairings

Leave Management

Manage integrated vacation bidding & ad-hoc leave requests

Fully Automated Duty Swap

Eliminate scheduler bottlenecks / Empowers crew to instantly swap flights based on pre-defined legality rules without manual approval

ROIS Crew: a “Single Pane of Glass” for the Entire Operational Lifecycle

One Platform: Unifying Planning, Rostering, Real-Time Tracking, Crew Experience & Operation Insights

ROIS Crew

Long-Term Strategic Planning

- Manpower Planning
- Pairing Cost Estimation
- Annual Leave Management

Mid-Term Schedule Optimization

- Pairing Builder
- Roster Builder
- Training Builder
- Pairing Optimizer
- Roster Optimizer
- Training Optimizer

Day Of Ops Crew Tracking

- Pairing/Roster Operation
- Training Adjustment & Projection
- Recency Extension
- Duty Swap & Absence Request
- Crew Recovery
- Fatigue Display
- GD & APIS
- HOTAC

Crew Portal / APP

- Roster Calendar
- Check-In (location)
- Roster Change & Announcement Notification
- Request/bidding
- Flight log entry
- Offline Storage
- Personal Center
- KPI Statistics

Post Operation

- Reports & Operational Analysis
- Flight Log Management
- Allowance Management (Crew Pay)

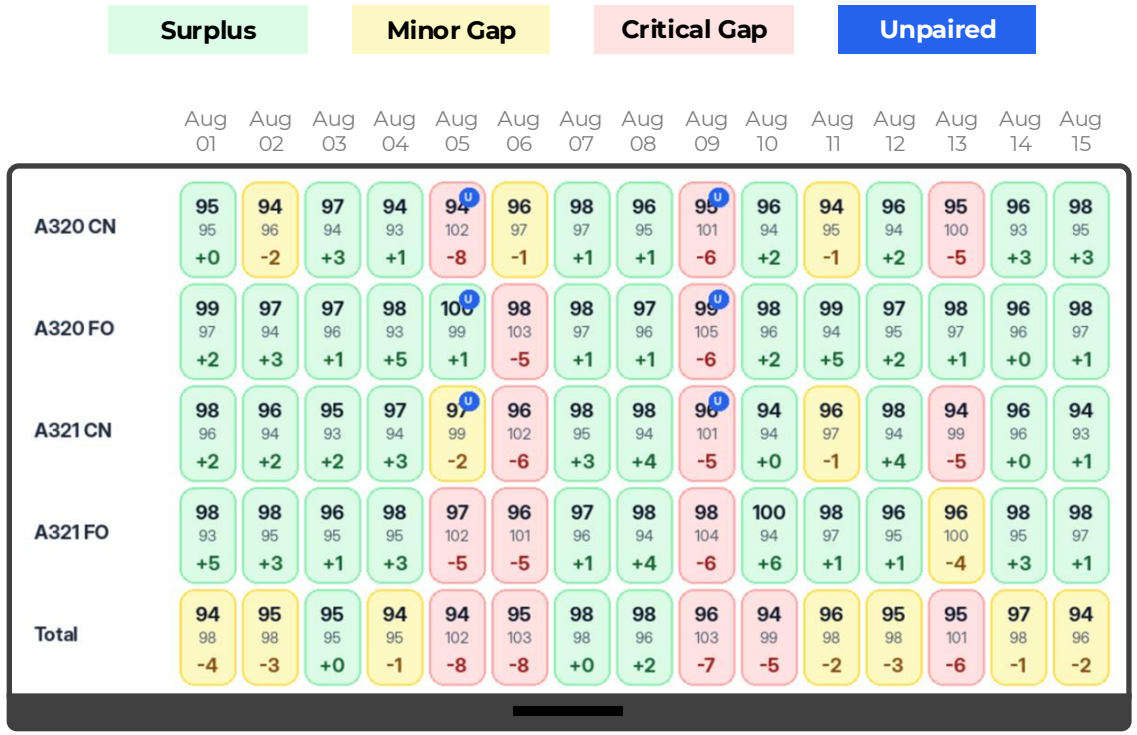
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ROIS Crew
Key Features



Strategic Planning: Manpower Planning

Proactive workforce optimization and visual gap analysis



Daily Manpower Heatmap

Core Capabilities

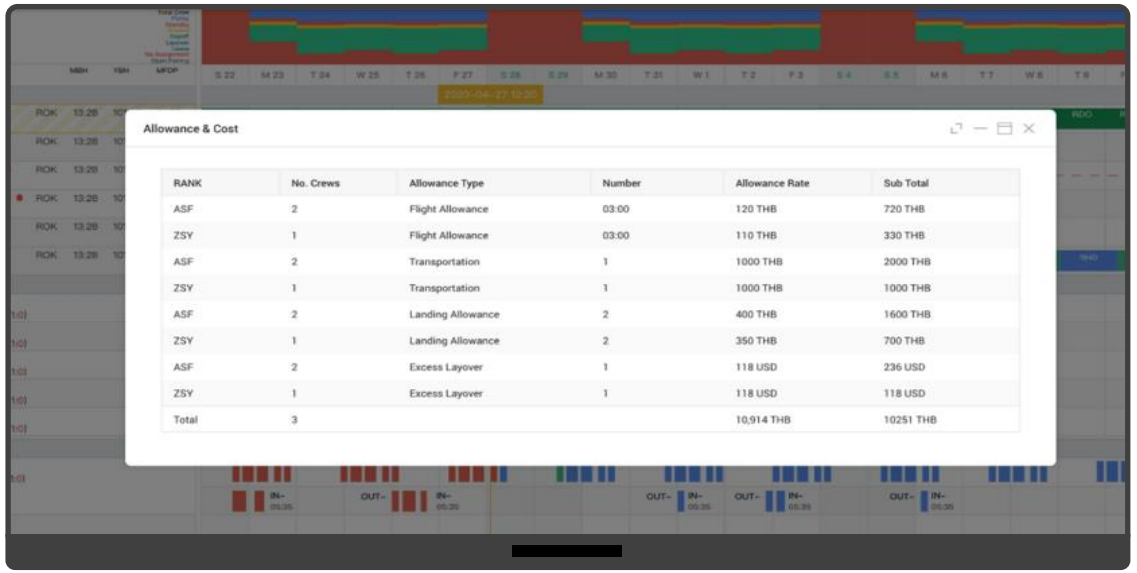
- **Dynamic Availability Configuration:** Easily set and adjust crew availability ratios across diverse assignments (flight, ground duties, training)
- **Scenario-Based Pre-assignments**: Import and manually configure pre-assignment quantities to build robust, multi-scenario optimization models
- **Predictive 'What-If' Analysis:** Leverage the Pairing Optimizer to generate required pairings against various future flight schedules
- **Visual Supply-Demand Mapping**: Instantly translate complex crew supply and operational demand data into actionable visual insights

Business Value

- Shift from reactive scheduling to **proactive workforce planning**
- By identifying critical manpower gaps before they impact live operations, Airlines can ensure adequate crew availability, optimize deployment, and **make data-driven, cost-effective recruitment decisions**

Strategic Planning: Pairing Cost Estimation

Providing financial forecasting and budget optimization



Cost Estimation for Future Pairing

Core Capabilities

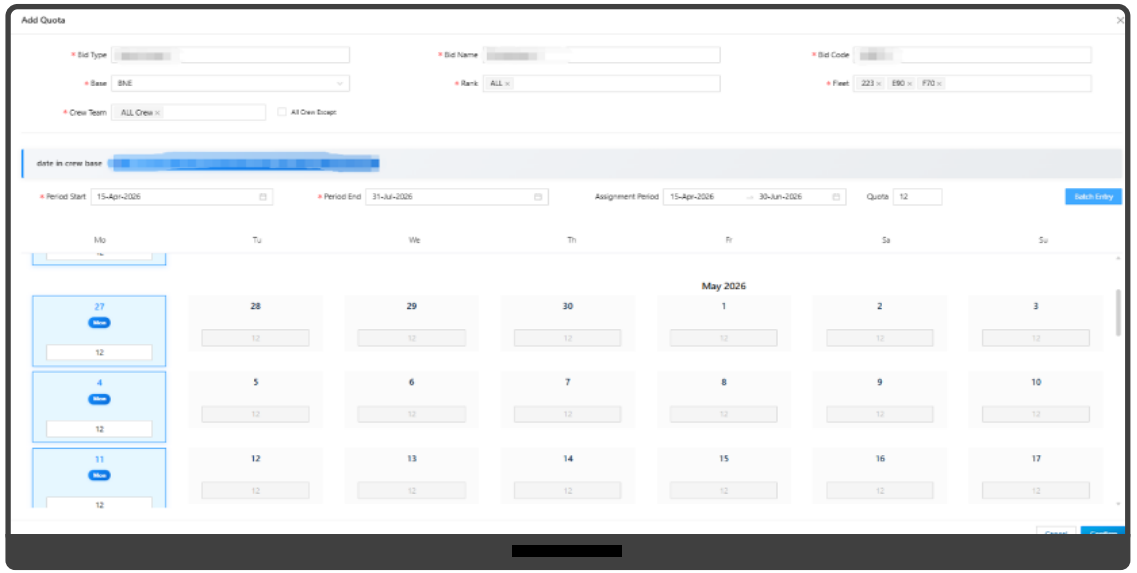
- **Multi-Period Forecasting:** Run accurate cost estimations across multiple future roster periods to support long-term financial planning
- **Comprehensive Cost Modeling:** Automatically calculate a wide spectrum of operational costs, including:
  - Deadhead (DHD) flights & Hotel accommodations
  - Flight time, FDP overtime, and layover allowances
  - Transportation, WOCL, and holiday allowances
  - Specialized pay (risk-area, landing/takeoff, test flights)
- **Scenario Comparison:** Evaluate the financial impact of different pairing strategies before schedules are finalized

Business Value

- Delivers **accurate financial projections** and **detailed cost breakdowns** before rosters are published
- Airlines can **optimize pairing construction**, eliminate unnecessary expenditures, and ensure strict budget adherence

Strategic Planning: Annual Leave Management

Automated, fair, and transparent leave lifecycle management



Leave Quota Management

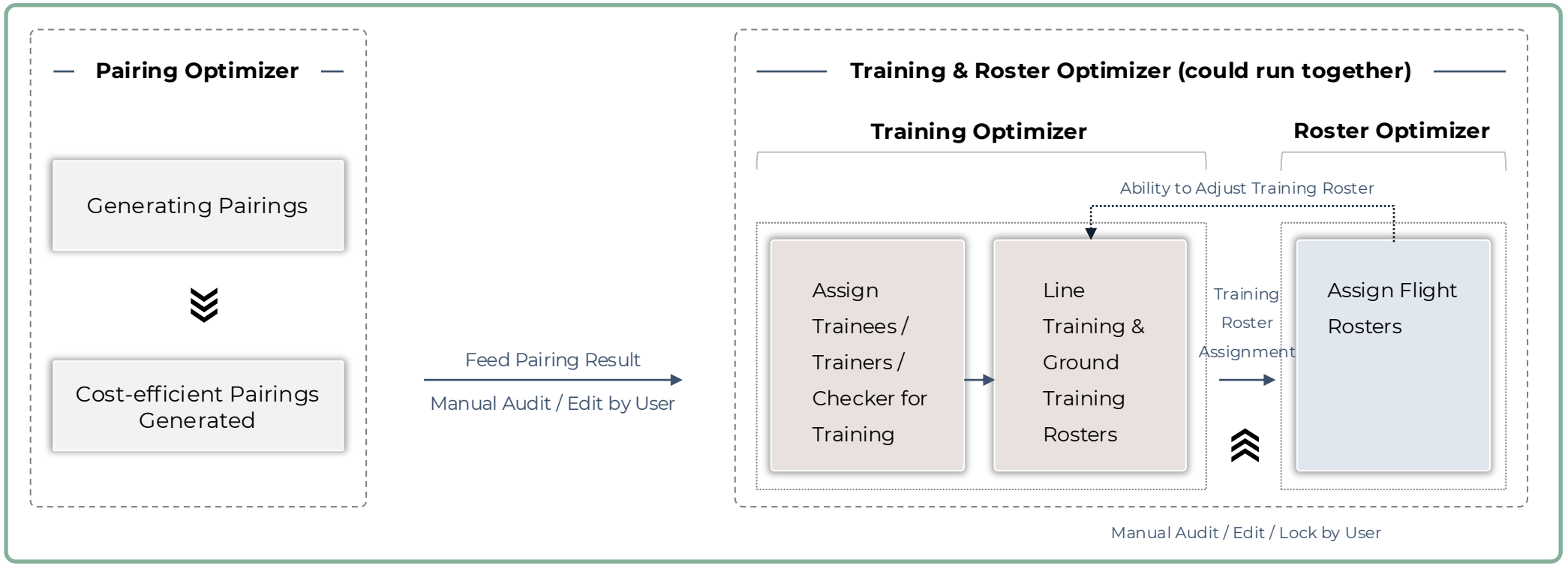
Core Capabilities

- **End-to-End Workflow:** Fully manages the leave lifecycle from Entitlement and Quota setup to Request / Bidding, Auto-Approval, and Publishing
- **Flexible Application:** Supports both standard Leave Requests and sophisticated point-based Bidding systems to suit your operational policies
- **Auto Approval Routing:**
  - Rule-based auto-approval accelerates processing
  - Manual override capabilities ensure planners retain final control
- **Maximized Crew Satisfaction:** Supports multi-round applications for unsatisfied crew members to ensure fair distribution of time off
- **Real-Time Visibility:** Live tracking of both individual entitlement consumption and overall operational quota limits

Business Value

- Replaces a traditionally labor-intensive process into a **streamlined, automated workflow**
- Reduces administrative overhead for roster planners
- Enhances crew experiences through a **transparent, equitable, and highly responsive leave allocation process**

Schedule Optimization: Holistic Optimization



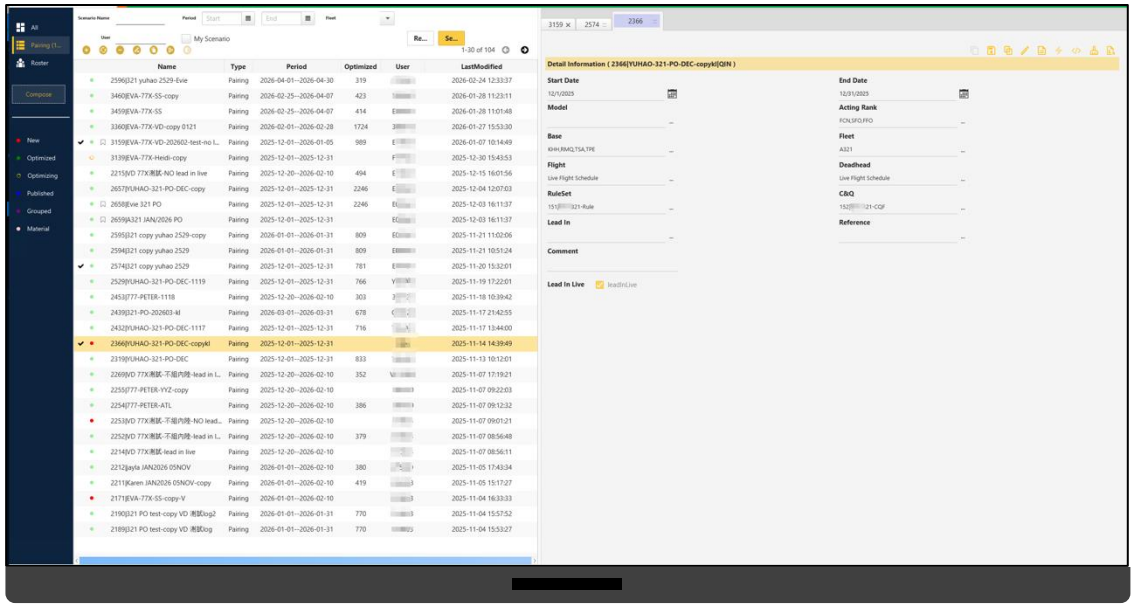
Optimization Process

A structured workflow to maximize efficiency and compliance:

- **Run Pairing Optimizer:** Generates all flight pairings. Training Optimizer selects suitable pairings from LIVE for recurrent training assignment
- **Run Training Optimizer:** Successfully assigns training rosters for trainees, trainers, and/or checkers
- **Run Roster Optimizer:** Uses assigned training rosters as pre-assignments and proceeds with regular roster assignment

Schedule Optimization: Pairing Optimizer

Driving cost-efficiency while prioritizing crew well-being through intelligent automation



Pairing Optimizer

Innovative Features

Freighter-Specific FIFO Fairness:

- Automates complex "first to arrive, first to leave" rules at outstations (e.g., 777X fleets)
- **Business Values:** Solves a major industry constraint, eliminating unfair wait times

Dynamic Cross-Base Pairing:

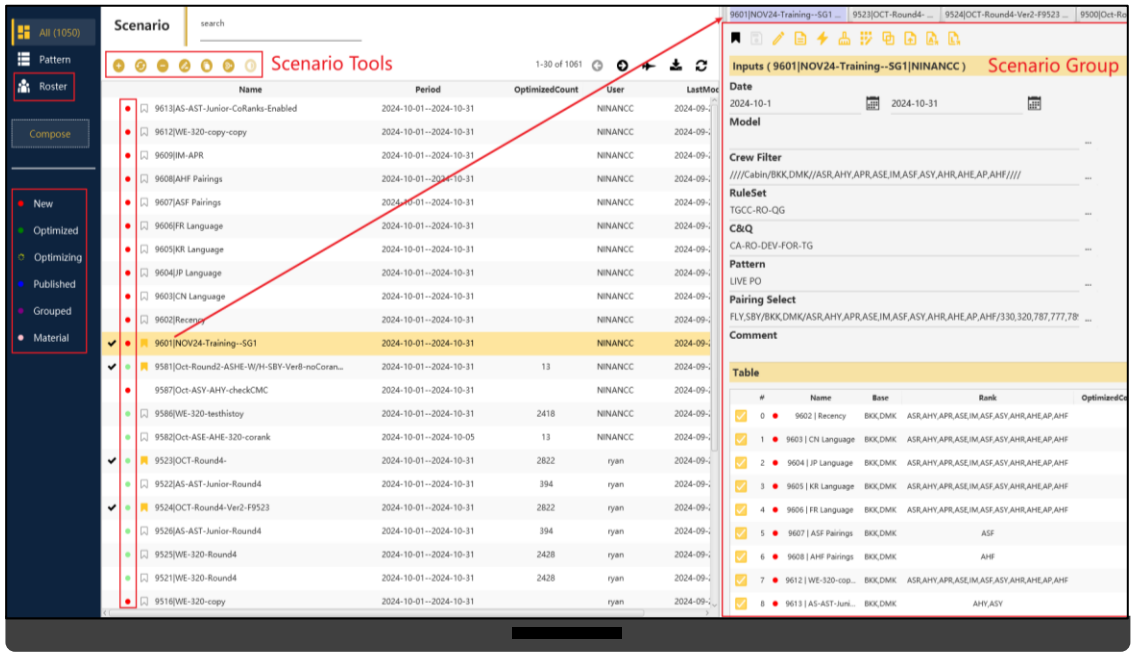
- Intelligently balances uneven manpower by constructing 4-7 days multi-base pairings
- **Business Values**: Reduces expensive deadheading (DHD) and unnecessary overnights, driving operational cost savings

Transparent Crew Perspective:

- Provides crew with early visibility into flight/rest rhythms during the preference submission phase
- **Business Values**: Delivers a human-centric schedule that empowers crew, improves work-life balance, and minimizes post-assignment complaints

Schedule Optimization: Roster Optimizer

Delivering personalized, equitable schedules while maintaining control over operational costs



Roster Optimizer

Innovative Features

Tag-Based Distribution:

- Dynamically matches pairing tags (e.g., destination country) with specific crew profiles and preferences (e.g., nationalities)
- **Business Values**: Fulfills individual cultural and personal needs while guaranteeing global roster equity, significantly boosting crew retention

Rank-Aware Workload Fairness:

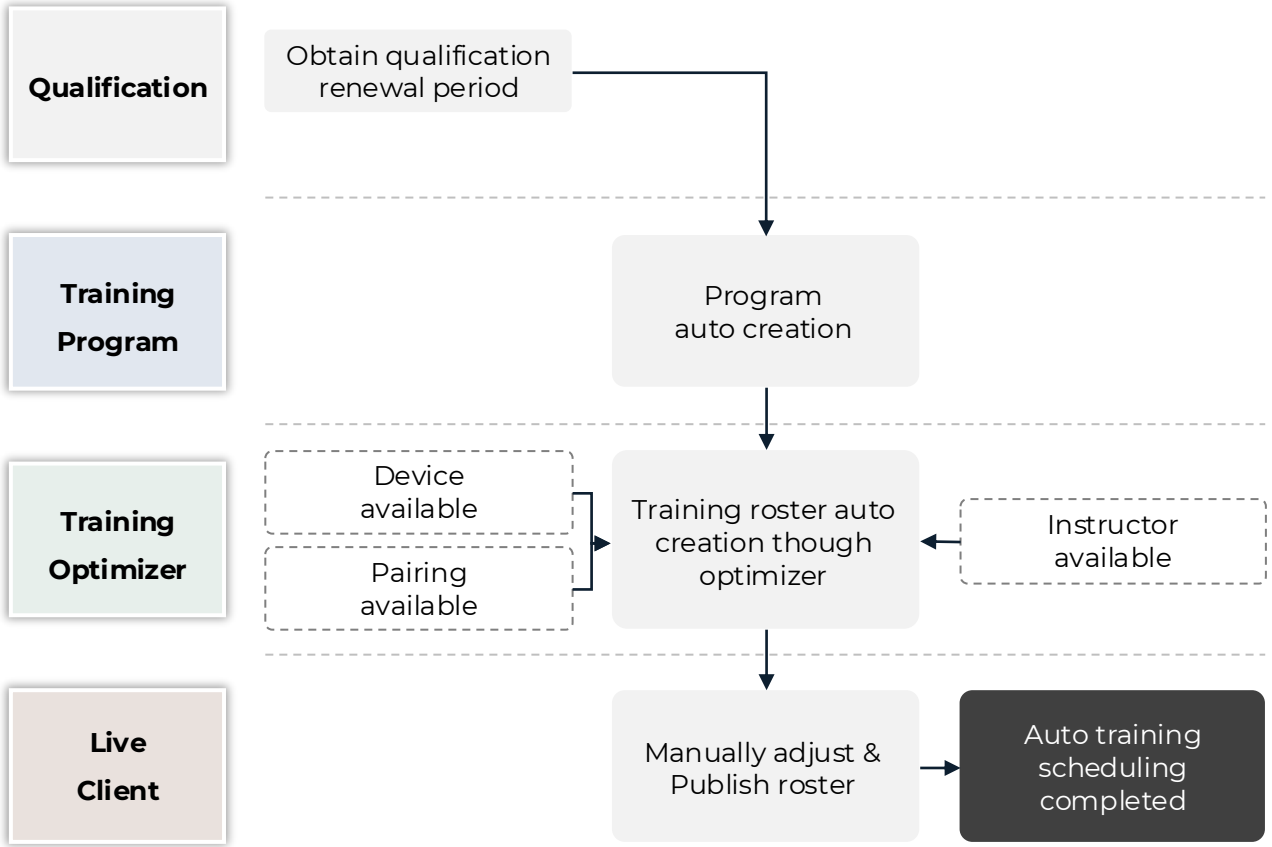
- Automatically differentiates and balances flight hours across distinct crew ranks (e.g., Instructor Captains vs. Regular Captains)
- **Business Values**: Ensures equitable distribution of work tailored to specific roles and seniority levels without manual intervention

Comprehensive Cost Modeling:

- Executes deep cost estimations during the planning phase, factoring in deadheading, hotels, WOCL (Window of Circadian Low), and risk-area allowances
- **Business Values**: Provides accurate financial projections, empowering airlines to balance crew fairness with strict budget constraints

Schedule Optimization: Training Optimizer

Streamlining complex training schedules to maximize expensive assets and elevate training quality



Training Optimization Process

Core Capabilities

Multi-Phase Training & Compliance:

- Optimizes Ground, SIM, and Line training while adhering to strict regulations and configurable CQF (Cost, Quality, Fairness) parameters

Asset & Device Maximization:

- Strategically schedules sessions to maximize the utilization efficiency of high-cost training devices (e.g., Simulators)

Intelligent Instructor & Dual-Role Assignment:

- Selects optimal instructors for consistent student relationships and supports complex "train-the-trainer" scenarios (acting as both trainee and instructor on the same course)

Business Value

- Reduces overall training costs by **eliminating device downtime**.
- Optimizes **instructor deployment**
- Ensures a compliant workforce without resource waste

Crew Tracking: Overall Crew Tracking Scope

Key Features for better crew operation coverage

Flight Integration

- Supports SSIM import and real-time interface integration with flight movement system
- Real-time dynamic adjustments of flights and automatic corresponding adjustments to pairings and rosters
- Manual creation of operating flights, DHD, train, etc.
- Supports to view uncovered, covered, and over-composition flights
- Include non-crew in the flight manifest, GD
- Quick pairing creation by combining flights of different types

Pairing builder & Adjustment

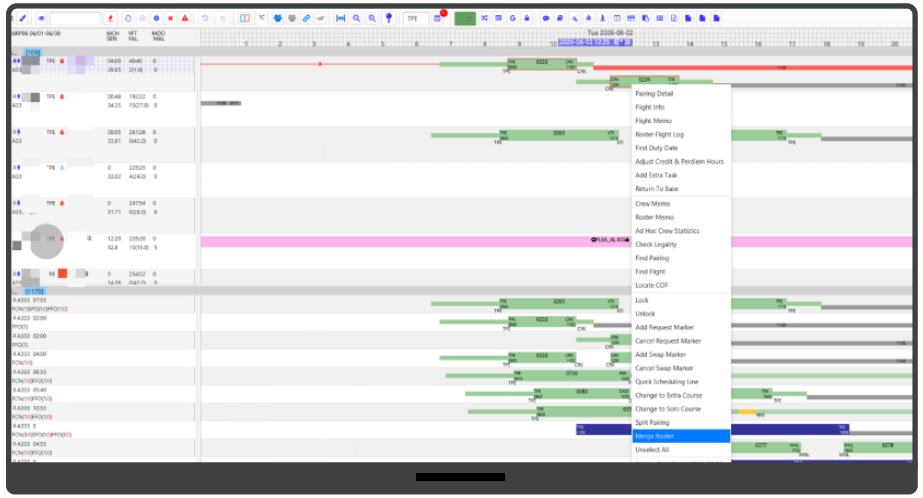
- Automatically checks legality in real time for pairing
- Manual adjustment of brief/debrief time
- Supports Discretion
- Adding segments to existing pairings for new pairings
- Quick replication of pairings
- Manual adjustment of pairing composition
- Automatic and manual creation of pairing attributes
- Auditing log for pairing changes
- Supports manual assignment of pairings to crews and automated best-fit crew recommendation

Roster Adjustment & Publish

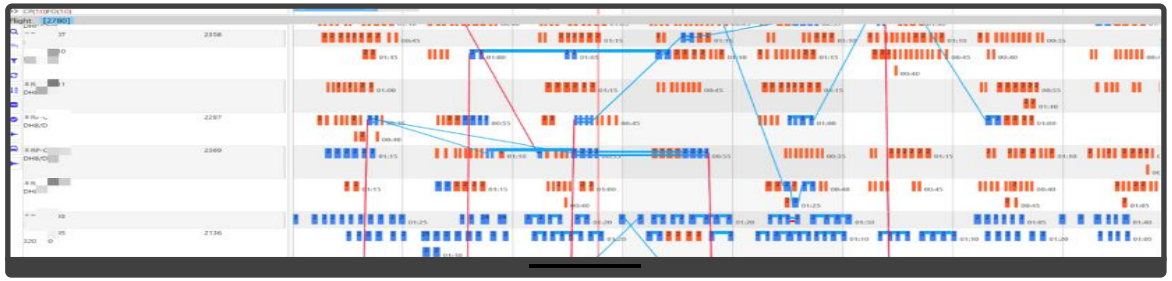
- Automatically checks legality in real time for roster
- Quick assignment of ground roster
- Supports splitting rosters (horizontal and vertical)
- Automated processing of trip trade approvals and roster creation
- Automated processing of request/bidding approvals and roster creation
- Offers optimal fit and standby functions to resolve irregularities
- Auditing log for roster changes
- Schedule/dynamic/crew request publish
- Check in/duty change acknowledge Monitor
- E-flight log for accurate and prompt post flight data collection

Crew Tracking: Operational Monitoring (1)

Providing disruption visualization and manipulating the schedule



Roster Merging for Fast Roster Reconstruction



Global Crew Link View

Core Capabilities

Situational Awareness & Agile Adjustments

Visualizing operational risks and executing rapid schedule modifications during disruptions

Agile Schedule Manipulation:

- Intuitive tools to horizontally / vertically split pairings or rapidly merge roster segments
- Enables highly flexible, large-scale schedule modifications to instantly respond to weather events or sudden delays

Crew Link Visualization:

- Provides a real-time, global view of cross-flight crew connections and aircraft changes
- Identifies transfer risks and insufficient turnaround times before they cascade into larger network delays

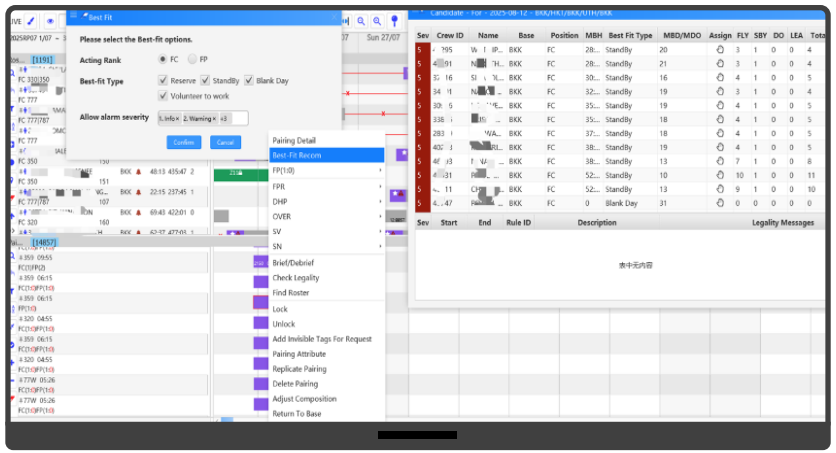
Business Value

- Controllers can **visualize the exact impact of a delay**
- Executes rapid, compliant adjustments to **minimize recovery time**

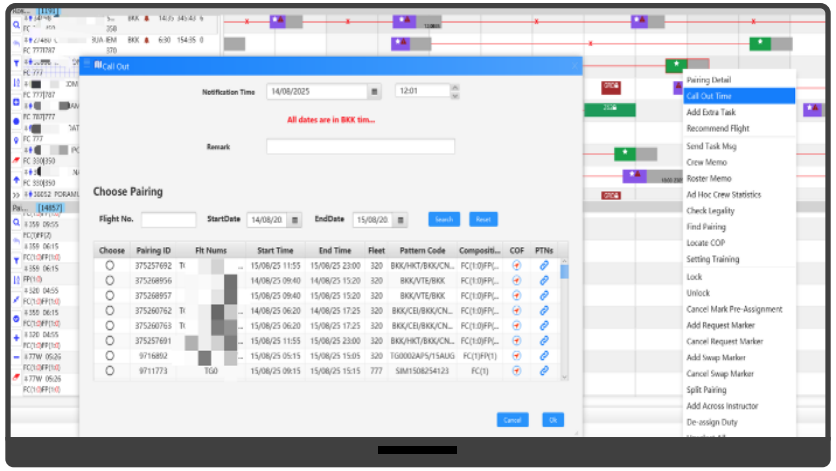
Crew Tracking: Operational Monitoring (2)

Accelerating recovery by identifying and deploying available personnel to cover open flights

Best Fit



Standby Callout



Core Capabilities

'Best Fit' Intelligent Matching:

- Recommends pre-validated crew for open pairings using complex sorting (e.g., volunteers, availability)
- Drastically reduces assignment time by instantly presenting candidates that pass real-time legality checks

Standby Call Out & Dashboard:

- Rapidly deploys standby crew with precise time-tracking for accurate flight time records
- Provides total visibility into current and next-day standby pools, ensuring critical open positions are filled instantly to prevent delays

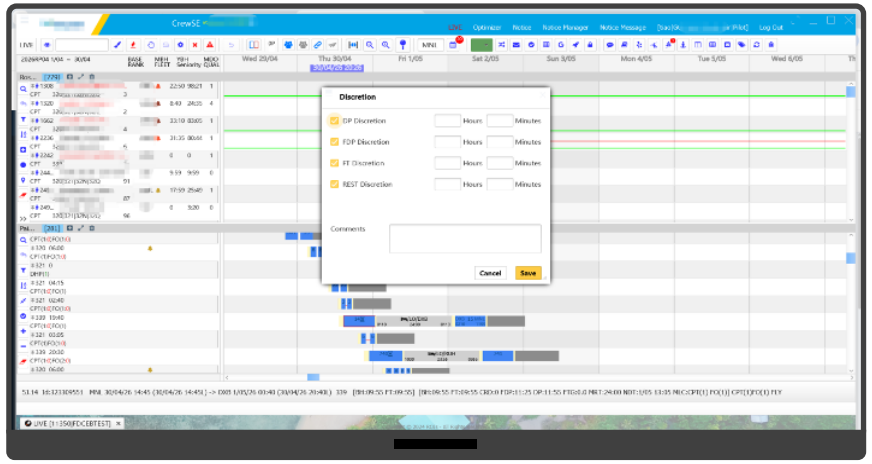
Business Value

- **Accelerates the recovery phase** by eliminating the guesswork in crew assignment
- By presenting **pre-validated candidates and clear standby pools**, operations continue with minimal delay and guaranteed compliance

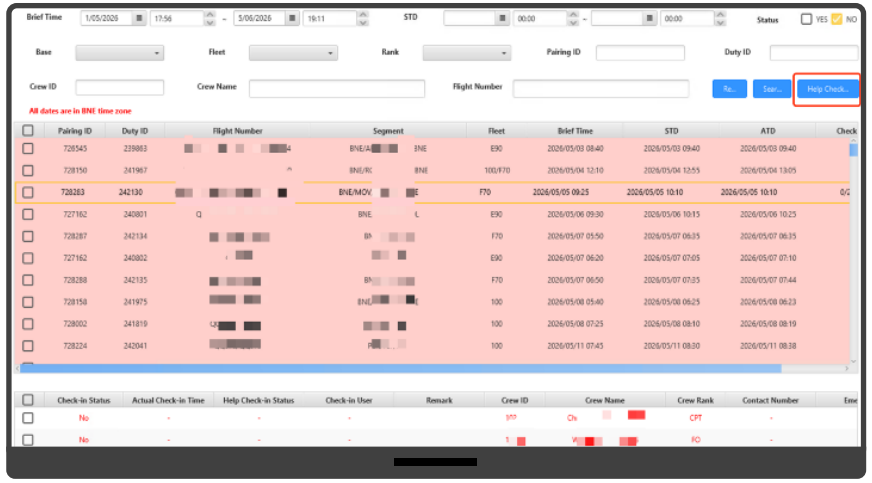
Crew Tracking: Operational Monitoring (3)

Safeguarding operations with closed-loop alert tracking and real-time crew readiness checks

Discretion Management



Check in Monitoring



Core Capabilities

Closed-Loop Alert Handling:

- Unified tracking of regulatory alerts with assigned ownership, countdown deadlines, and overdue reminders
- Prevents violations by ensuring high-risk alerts are prioritized and resolved

Controlled Discretion Management:

- Safely handles operational extensions (e.g., FDP, Rest) with built-in regulatory validation and audit reporting
- Provides necessary operational flexibility during exceptional circumstances

Real-Time Crew Monitor:

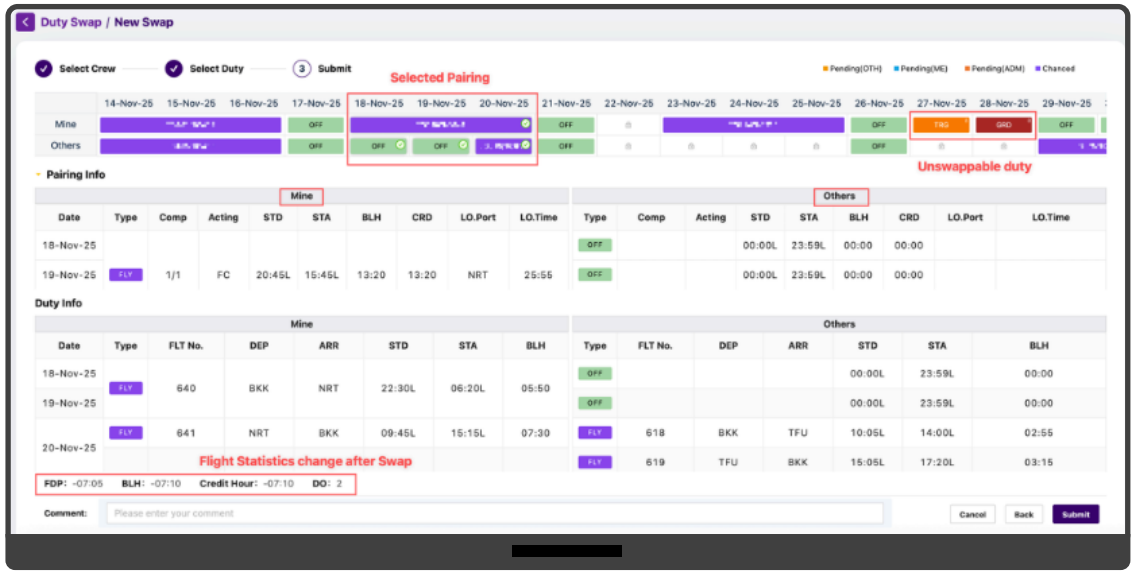
- Tracks live check-in status and roster change acknowledgments, featuring administrator proxy capabilities
- Prevents last-minute departure delays caused by crew unawareness

Business Value

- Acts as the safety net for day-of-operations
- **Eliminates compliance blind spots**
- Provides a legal framework for necessary extensions
- **Guarantees crew are present and informed** for on-time departures

Crew Tracking: Duty Swap

Empowering crew with flexible, self-service schedule adjustments without compromising compliance



Duty Swap Comparison

Core Capabilities

Configurable Exchange Marketplace:

- Customizable swap rules supporting open boards, anonymous requests, or targeted "Friend List" exchanges (with whitelist / blacklist controls)
- Gives airlines control over exchange parameters while providing crew an intuitive platform to publish and find tasks

Smart Search & KPI Forecasting:

- Advanced search functionalities paired with instant, side-by-side KPI change comparisons before a swap is finalized
- Empowers crew to make informed decisions by visualizing how a swap impacts their hours, rest, and earnings

Automated Approvals:

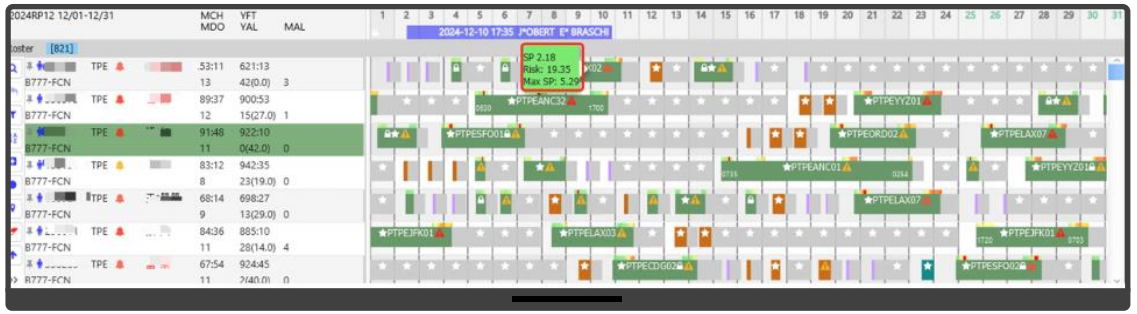
- Executes real-time regulatory and legality verifications to instantly and automatically approve valid swap requests

Business Value

- Elevates crew satisfaction scores
- **Drives down costly unscheduled absences** (e.g., sick calls)
- Allows crew to manage their own work-life balance legally and instantly

Crew Tracking: Fatigue Management

Embedding fatigue model directly into the scheduling core



Fatigue Display

Core Capabilities

Global Rule Engine:

- Out-of-the-box support for complex, multi-jurisdictional aviation regulations (including EASA, CCAR121, HK CAD, Australia, Canada, and the Philippines)
- Enables international operations and network expansion without the administrative burden of manual rule checking

Integrated Fatigue Risk Management:

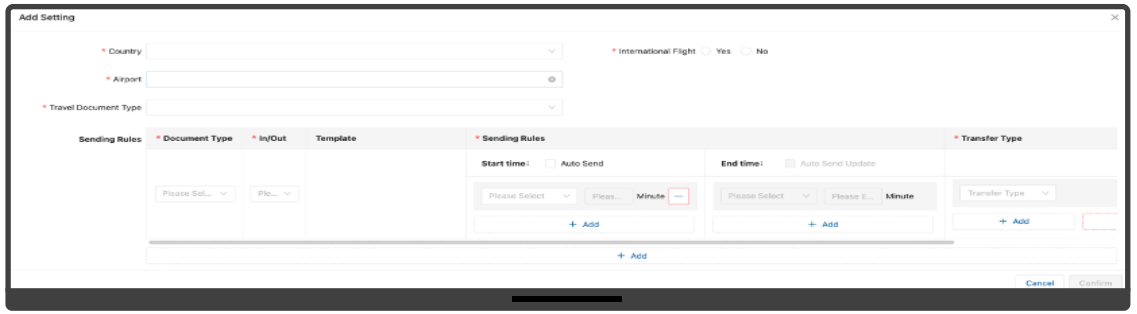
- Embeds mainstream third-party fatigue modeling directly into the rostering interfaces and optimization workflows
- Shifts fatigue management from a reactive audit to a proactive safeguard
- Ensures safety is mathematically built into every schedule before publication

Business Value

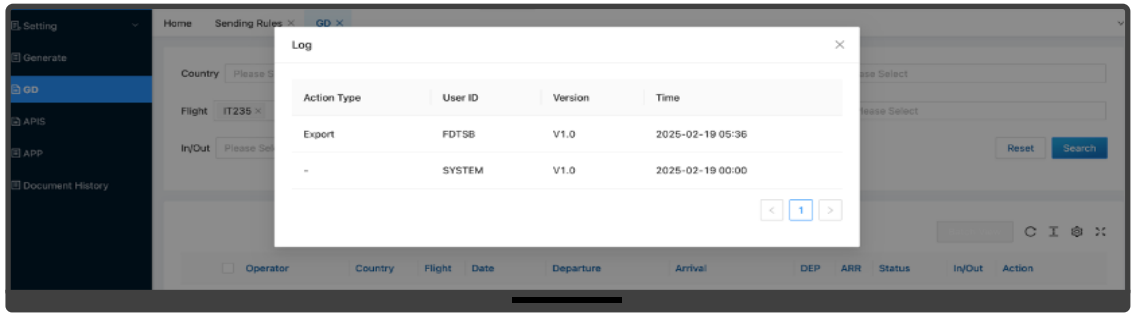
- **Eliminates the risks of regulatory violations** across global jurisdictions
- Protectes crew health and **ensures peak operational safety**

Crew Tracking: GD & APIS Management

Eliminating manual errors and preventing regulatory fines through automated global doc. transmission



Configure Document Type, Recipient Address, and Sending Time



Sending Records & Version Control

Core Capabilities

Universal Document Configuration:

- Highly customizable engine supporting the full spectrum of national customs formats (GD, APIS, APP, CoC, TM5, etc.) with configurable templates and routing destinations
- Adapts to any country's specific border control mandates, ensuring global operational readiness

Automated Generation & Dispatch:

- Automatically generates and transmits required documents based on precise, country-specific timing rules

Real-Time Monitoring & Fail-Safes:

- Continuous tracking of all outbound communications with immediate, proactive alerts for un-transmitted or failed files

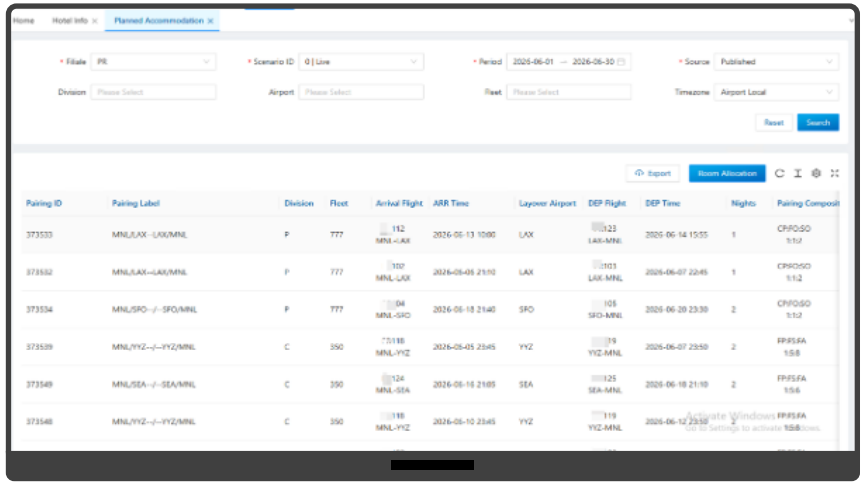
Business Value

- Fully automated background process
- Eliminates documentation errors
- **Safeguards the airline from severe regulatory fines**, border delays, and operational friction

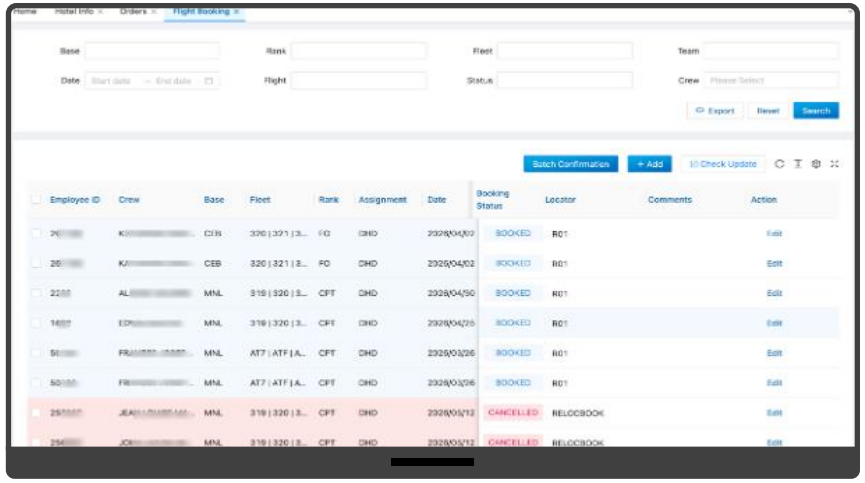
Crew Tracking: HOTAC

Streamlining hotel, deadhead, and ground transport logistics

Pairing-Based Hotel Requirement



Automatic DHD Flight Requirement Generation



Core Capabilities

Dynamic Hotel Management:

- Automatically generates and transmits room requirements directly to hotels during pairing creation
- Real-time adjustments during day-of-ops disruptions

Automated Deadhead (DHD) Synchronization:

- Triggers DHD flight requirements and continuously updates ticketing status based on live operational tasks

Synchronized Ground Transport:

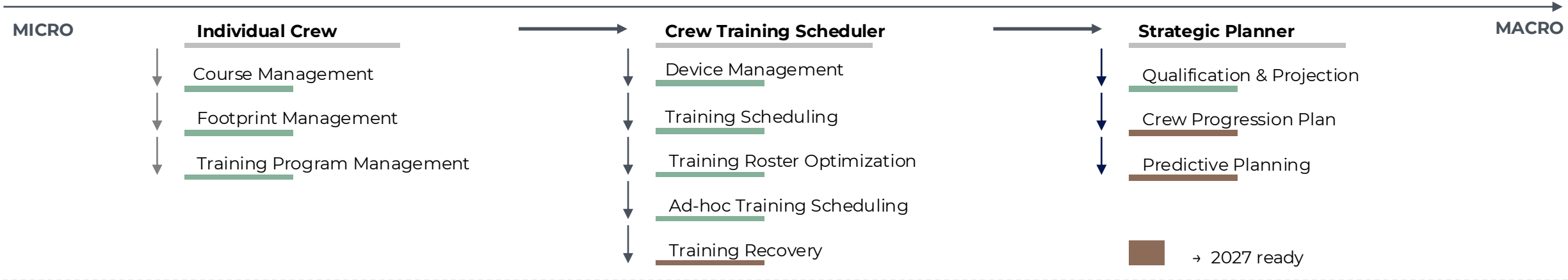
- Auto-generates shuttle bus schedules that are perfectly timed and dynamically updated based on actual flight arrivals and task statuses

Business Value

- Transforms complex, multi-layered **crew logistics** into an **automated workflow**
- Enhances crew experience
- **Prevents costly operational delays** caused by missing accommodations, missed deadheads, or delayed ground transport

End-to-End Crew Training Management

Centralizing training administration from initial hire to recurrent checks, ensuring continuous compliance and operational readiness



Core Capabilities

Agile Scheduling & Complex Scenarios:

- Schedules ground training while supporting complex, overlapping setups (e.g., simultaneous instructor / trainee roles, or mixed training syllabi on the same flight)

Proactive Tracking & Exception Handling:

- Real-time monitoring of training statuses with dedicated workflows to instantly identify and resolve "Lost Training" events

Automated Qualification Lifecycle:

- Dynamically projects future qualifications based on planned schedules, and automatically updates active qualifications upon successful course completion

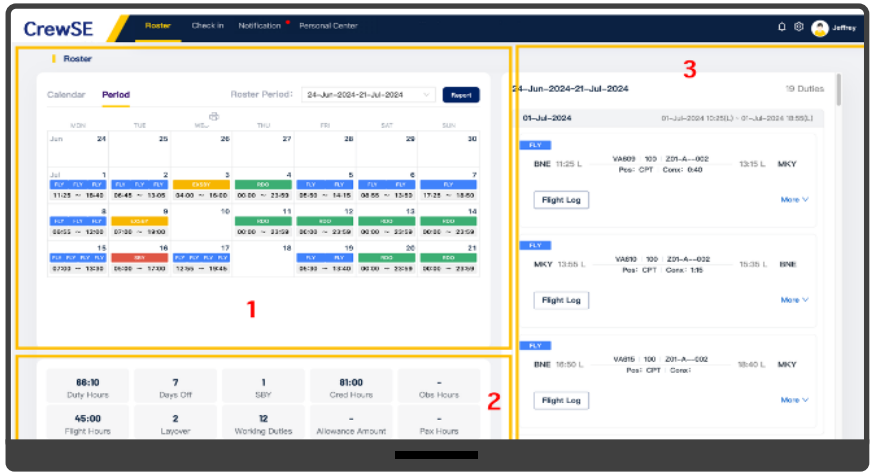
Business Value

- **Transforms fragmented training administration into a centralized engine**
- Reduces planning overhead
- Guarantees every crew member maintains required qualifications
- Eliminates the risk of operational disruptions due to lapsed training

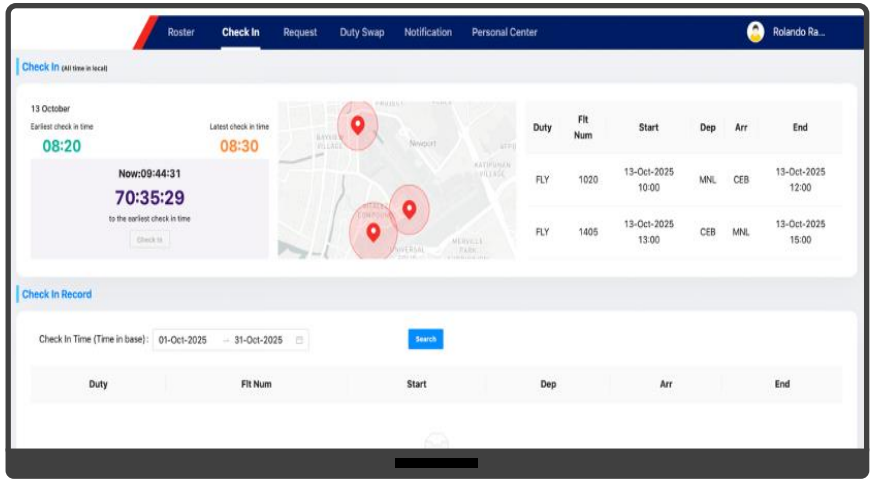
Crew Portal/App (1): Mobile Empowerment

A unified Crew mobile hub for real-time schedule management and operational interaction

Crew Calendar



Crew Check-In



Core Capabilities

Comprehensive Roster & Insights:

- Interactive calendar view integrating flight duties, training events, and HOTAC details, alongside personalized performance statistics and reports

Business Value: Ensures crew are always fully informed and prepared for their upcoming duties

Interactive Operations & Offline Support:

- Features multi-method Check-In (GPS Location, IP, or fixed device)
- Request / Bidding / Swap submissions, and Flight Log entry with offline storage

Business Value: Crew manages administrative tasks anywhere, anytime, even without internet connectivity, syncing automatically upon online

Real-Time Alerts & Advisories:

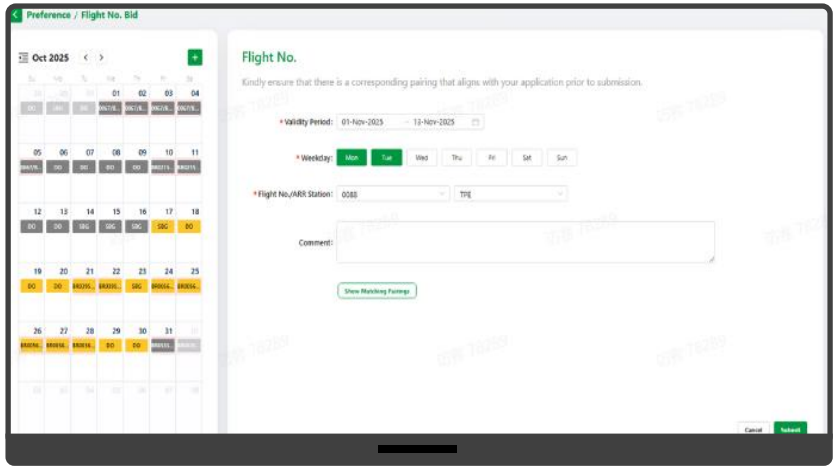
- Instant push notifications for dynamic roster changes, operational alerts, and critical company advisories

Business Value: Guarantees immediate awareness of critical schedule updates, eliminating communication gaps and reducing missed assignments

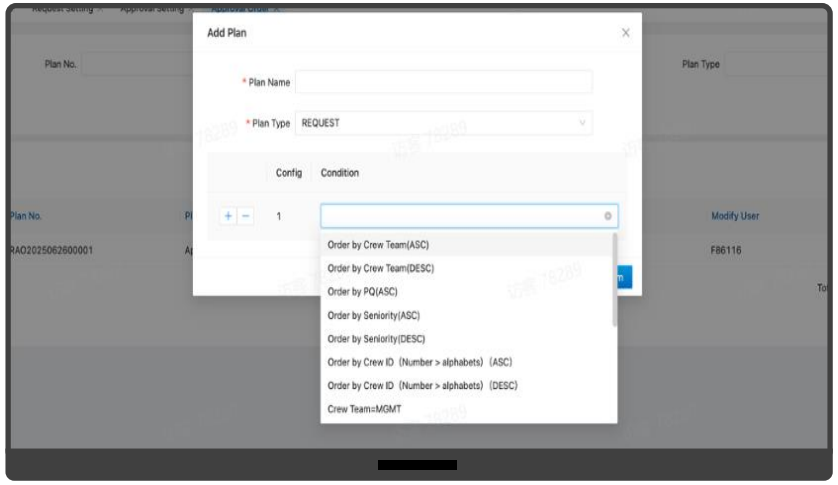
Crew Portal/App (2): Request & Bidding

Flexible scheduling options while enforcing operational quotas and fairness

Request & Bid



Automatic Approval with Configured Ranking Rules



Core Capabilities

Automated Request Processing:

- Manages ad-hoc leave, flight requests, and sick calls with built-in quota controls (by base / rank / fleet) and entitlement tracking
- Rule-based auto-approvals

Lifestyle Preference Integration:

- Allows crew to submit lifestyle preferences (e.g., AM / PM shifts, specific layovers) which are mathematically factored into roster generation
- Generates optimized schedules that naturally align with personal needs

Transparent PoiAnt-Based Bidding:

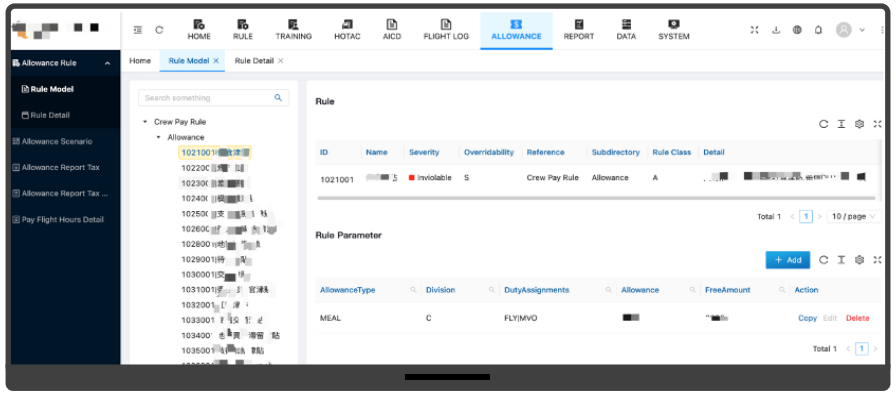
- Utilizes fixed-price or auction-style point systems to manage highly desirable assignments and competitive leave quotas

Business Value

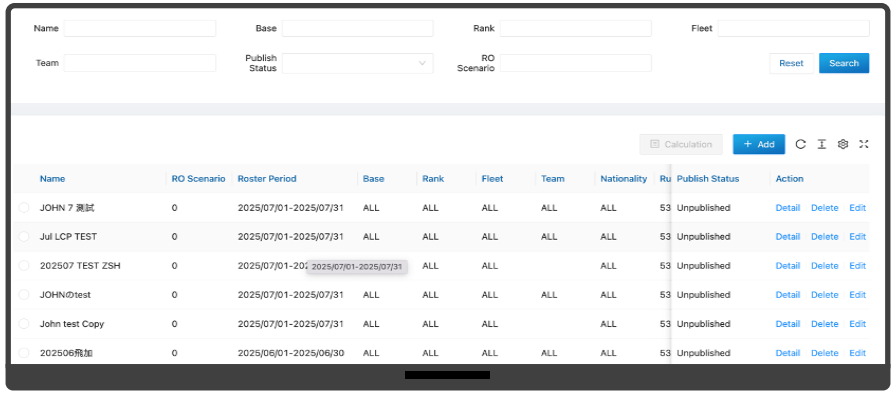
- **Transforms schedule generation into a collaborative, transparent process**
- Improves crew satisfaction
- Enforces operational quotas
- Reduces administrative overhead

Crew Pay: Allowance Management

Automating complex allowance calculations with rule-based precision on financial accuracy



Allowance Rule Setting



Allowance Calculation

Core Capabilities

Dynamic Rule & Type Configuration:

- Easily defines custom allowance types (e.g., per diems, sector pay)
- Builds complex calculation rules based on specific duty content

Scenario-Based Processing:

- Executes bulk allowance calculations tailored to specific time ranges, operational scenarios, or distinct crew groups

Review, Adjust, and Publish Workflows:

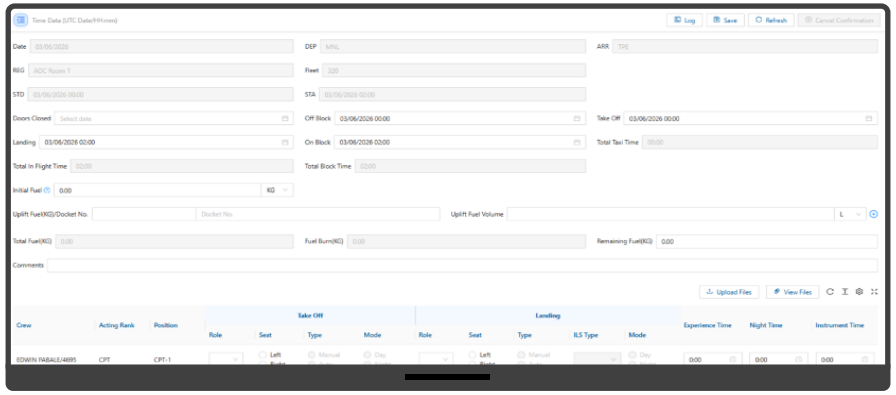
- Provides standardized data outputs for the finance department
- Features manual adjustment capabilities before final publication to the crew

Business Value

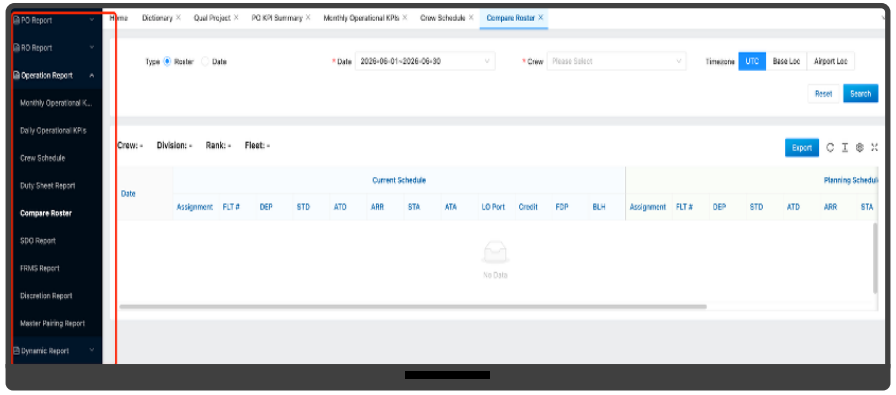
- Automates and eliminates heavy administrative workloads
- **Reduces payroll processing time** and crew disputes
- **Ensures calculation accuracy**
- Maintains the flexibility to adapt to evolving airline policies

Post Operation

Transforming post-flight data into compliance records and business analytics



Flight Log Review & Correction



Multi-Type Reports

Core Capabilities

Flight Log Capture:

- Supports both automated interface-based and manual Flight Log entries
- Features offline storage for mobile crew recording

Comprehensive Operational Reporting:

- Supports for standard PO / RO (Planned vs. Actual) and operational reports to evaluate day-of-ops performance

Custom Analytics & Integration:

- Features embedded tools for administrators to build custom reports.
- Data integration with third-party BI platforms

Business Value

- Closes the operational loop by capturing accurate flight data directly from the crew
- **Provides visibility into operational bottlenecks and schedule efficiency**