

Vision Document: Compensatory Time Off (CTO) & Overtime Credit (COC) System

1. App Overview

App Name: CompTime Tracker (or similar)

Mission: To provide a transparent, accurate, and policy-compliant system for managing compensatory time, ensuring employees are fairly credited for overtime and that the organization can easily manage its time-off liabilities.

Core Concept: This system replaces manual spreadsheets and guesswork with a formal, automated workflow, managed centrally by HR Staff.

- **Compensatory Overtime Credit (COC):** The "bank" or "balance" of hours an employee earns for working approved overtime. This is the *credit* HR records.
- **Compensatory Time Off (CTO):** The paid time off an employee *takes* by "spending" their accrued COC. This is the *debit* HR records.

1.5 App Structure & Navigation

The application will use a clear, tab-based main navigation, similar to the provided screenshot (image_cd9a44.png), to organize its functions.

- **Dashboard:** (Future scope) Potentially for showing HR alerts (F4) and quick-access buttons.
- **Employee Management:** The area to perform F1: Add & Manage Employees.
- **COC Management:** The main workbench containing:
 - F1: Log Overtime (Add COC)
 - F1: Generate COC Certificate
 - F1: Log CTO (Use COC)
 - F1: View Employee Ledger
- **Reports:** Contains all reports from F3.
- **Master Data / Settings:** Contains:
 - F2: Holiday & Weekend Configuration
 - F2: Accrual Rules Engine (viewing the logic)
 - F2: User Account Management

2. The Problem

Managing compensatory time is notoriously difficult, especially when using manual systems,

leading to significant risks and inefficiencies.

- **Error-Prone Manual Tracking:** Using spreadsheets, emails, or paper forms to track COC is highly susceptible to human error, leading to incorrect balances, disputes, and lost data.
- **Lack of Transparency:** When data is siloed in spreadsheets, it's difficult for HR to provide quick, accurate answers to employees, leading to frustration and disputes.
- **Compliance & Policy Risk:** Organizations have strict rules about accrual rates, balance caps, and expiration dates. Manual systems make it nearly impossible for HR to enforce these rules consistently, creating legal and financial liability.
- **Administrative Overhead:** HR Staff spend excessive time cross-referencing timesheets, manually calculating balances, and building reports, instead of focusing on strategic tasks.
- **Financial Obscurity:** The total "banked" COC across the organization represents a significant financial liability. Without a central system, Finance cannot get an accurate, on-demand report from HR.

3. Target Audience

- **Primary (End User):** HR Staff. They will be the primary and sole active users of the system. Their role is to centrally record, manage, and track all Compensatory Overtime Credit (COC) and Compensatory Time Off (CTO) for all employees.
- **Secondary (Stakeholders):** Finance, Payroll, and Senior Management. These groups are not active users but will consume the reports (e.g., Liability Reports, Usage Trends) generated by HR Staff via the system.

4. Core Features

F1: HR Central Workbench

The main control center for HR Staff.

- **Add & Manage Employees:** A searchable database of all employees. HR can **add new employees** (for initial setup), view, and edit details.
 - **Employee Fields:** Last Name, First Name, Middle Initial, Suffix, Status (e.g., Active, Inactive), Position, Office/Division.
- **View Employee Ledger:** HR selects an employee to see their current **Active COC Balance** (total of all *certified* credits) and a detailed, uneditable transaction history. The ledger clearly shows:
 - **Active Batches:** Credits that are certified, with a specific Valid Until date.
 - **Uncertified Batches:** Credits that have been logged but not yet certified (no Valid Until date).
 - **Used & Expired** transactions.
- **Initial Balance Migration (Historical Data Entry):**
 - A special tool for HR to enter *existing* balances from the old manual system, typically

- used once per employee during setup.
 - **Fields:** Employee, Month, Year, COC Earned (hrs), COC Used (hrs), Date of Issuance.
 - **Rules:** This form calculates a "Remaining" balance for that month. It **strictly validates** rules (max 40/mo, max 120 total, date of issuance must be on or after the last day of the month).
 - **Action:** This *directly* creates an **Active** credit batch, setting the Valid Until date based on the Date of Issuance (per Rule F2.4).
- **Log Overtime (Add COC):** A form for HR to enter *new* approved overtime for an employee, supporting **multiple days in one entry**.
 - **Form:** HR selects Employee, Month, Year, then "Add Day" (as per screenshot image_c248b7.png).
 - **Entry Grid:** A table where HR can add multiple rows. Each row contains:
 - Date Worked
 - Day Type (auto-populated: "Weekday", "Weekend", or "Holiday")
 - AM In, AM Out, PM In, PM Out
 - COC Earned (auto-calculated by F2: Accrual Rules Engine. This is *not* Total Hours).
 - **Validation:** The system will **block** duplicate entries for the same Date Worked for the same employee within that month.
 - **Action:** Saving this form validates the 40-hour monthly cap and 120-hour total cap based on the *calculated* COC Earned. It creates a transaction logged as **"Uncertified"**. It does *not* have an expiration date yet.
- **Generate COC Certificate (Activates Credits):**
 - This is the *key* tool to make "Uncertified" credits "Active."
 - **Form:** HR selects Employee, Month, Year. The system shows the total "Uncertified" hours for that period.
 - **Fields:** Date of Issuance.
 - **Action:** Upon saving, the system:
 1. Logs that a certificate was issued (preventing duplicates).
 2. Finds all "Uncertified" credits for that period and switches them to **"Active"**.
 3. Sets the **Valid Until** date for all those credits based on the Date of Issuance (per Rule F2.4).
- **Log CTO (Use COC):** A form for HR to record *approved* CTO leave. Fields: Employee, Date(s) Taken, Hours Used.
 - **Validation:** The Hours Used field will be validated to only accept 4 or 8-hour blocks (per Rule 5.9.1).
 - **Action:** The system will automatically debit the *oldest* (First-In, First-Out) **Active** COC credits first. It will *not* debit "Uncertified" credits.

F2: Policy & Configuration Engine

The "brain" of the system, where HR Admins configure the rules.

- **Holiday & Weekend Configuration:** Admins must define standard weekend days (e.g.,

Sat, Sun) and maintain a list of all official holidays (e.g., "New Year's Day - 01/01/2025"). This calendar is the foundation for automatic accruals.

- **Accrual Rules Engine (Critical Calculation Logic):** This engine automatically calculates COC Earned based on Day Type and the In/Out time fields. Total Hours is *not* used.
 - **Rule 1: Weekday Logic**
 - **Window:** 5:00 PM – 7:00 PM (17:00 – 19:00)
 - **Calculation:** The system calculates the *overlap* between the AM/PM In/Out times and this 2-hour window.
 - **Example:** PM Out: 6:30 PM (18:30) -> COC Earned = 1.5 hours.
 - **Max:** The total COC Earned for a weekday is **clamped at 2.0 hours**.
 - **Rate:** This calculated time is multiplied by the weekday rate (e.g., 1.0x).
 - **Rule 2: Weekend / Holiday Logic**
 - **Window 1 (AM):** 8:00 AM – 12:00 PM (08:00 – 12:00)
 - **Window 2 (PM):** 1:00 PM – 5:00 PM (13:00 – 17:00)
 - **Calculation:** The system calculates the *overlap* between the AM/PM In/Out times and *only* these two blocks. Time worked outside these blocks (e.g., 12:00-13:00, or after 17:00) is **ignored**.
 - **Example:** AM In: 07:00, AM Out: 10:00 -> Calculated AM Hours = 2.0 (starts from 08:00).
 - **Example:** PM In: 13:00, PM Out: 18:00 -> Calculated PM Hours = 4.0 (stops at 17:00).
 - **Rate:** The total calculated time (AM + PM) is multiplied by the holiday/weekend rate (e.g., 1.5x).
 - **Rule 3: Data Handling**
 - **No Negative Hours:** All calculated COC Earned values are clamped at 0 (cannot be negative).
 - **Null Handling:** Invalid or empty time strings (e.g., "") are treated as null and ignored, not an error.
- **Balance & Accrual Caps (Rule 5.5.1):**
 - **Monthly Accrual Cap: Strict 40-hour limit.** The system will prevent *any* entry (Historical or New) that would cause an employee's *earned* COC for a single calendar month to exceed 40 hours.
 - **Total Balance Cap: Strict 120-hour limit.** The system will prevent any transaction that would cause an employee's *total unexpended balance* to exceed 120 hours.
- **Expiration Rules (Based on Date of Issuance):**
 - **The Golden Rule:** The expiration date is **always** calculated from the Date of Issuance of the Certificate of COC Earned.
 - **Formula: Valid Until = (Date of Issuance + 1 Year) - 1 Day.**
 - **Example (from screenshot):** Date of Issuance is 10/28/2025. The credits are Valid Until 10/27/2026. On 10/28/2026, they are forfeited.
 - **Automatic Forfeiture:** A daily system task will automatically find and forfeit any **Active** COC batches that have passed their "Valid Until" date, logging the transaction as "Expired."

- **CTO Availment Rules (Rule 5.9):**
 - **Block Usage (5.9.1):** The "Log CTO" form will reject any entry for Hours Used that is not 4 or 8.
 - **Continuous Usage Cap (5.9.2):** The system will monitor requests and alert HR if a new entry for an employee creates a continuous block of more than 5 days (40 hours) of CTO.
- **User Account Management:** Manage HR Staff user accounts and permissions (e.g., "HR Admin" vs. "HR Data Entry").

F3: Reporting & Auditing

Tools for HR to generate reports for stakeholders (Finance, Management).

- **COC Liability Report:** An organization-wide report showing the total outstanding **Active** (certified) COC hours, broken down by *forfeiture date* (e.g., "Credits forfeiting Oct 27, 2026: 1,500 hours," "Credits forfeiting Nov 3, 2026: 2,200 hours").
- **Uncertified COC Report:** A report showing all logged overtime that is still "Uncertified" and needs a Certificate to be generated.
- **Expiration Report:** A proactive report showing "All **Active** COC credits set to forfeit in the next 30/60/90 days," filterable by employee or department.
- **Full Audit Trail:** A detailed, system-wide log of all actions (who logged what, when) for compliance and dispute resolution.
- **Certificate Log:** A report of all generated COC Certificates to prevent duplicates.

F4: HR System Alerts

Proactive notifications visible only to HR Staff within the system.

- **Expiration Alerts:** "Heads up: 15 employees have a total of 150.5 hours forfeiting on [e.g., Oct 28, 2026]."
- **Data Validation Alerts:** "Entry for John Smith blocked: Exceeds 40-hour monthly accrual limit." or "Total balance for Jane Doe will exceed 120-hour cap." or "CTO entry for John Smith is '6' hours. Must be 4 or 8."
- **Duplicate Certificate Alert:** "A certificate for Jane Doe (Nov 2025) already exists. Cannot create duplicate."
- **Duplicate Entry Alert:** "The entry for Jane Doe on (Date) already exists in this batch."

5. User Flows

UF1: HR Staff Logs New Overtime (Day-to-Day)

1. An employee (Jane Doe) gives her manager a signed overtime sheet for two days of work in April 2025.
2. The manager signs the sheet and sends it to HR.
3. An HR Staff member logs in, navigates to the "**COC Management**" tab, and clicks "**Log Overtime (Add COC)**."
4. They select Employee: Jane Doe, Month: April, Year: 2025.

5. In the **Entry Grid**, they add the first row for a **Weekday**:
 - Date Worked: 04/07/2025
 - Day Type: Weekday (auto-populated)
 - AM In: 8:00 AM, AM Out: 12:00 PM, PM In: 1:00 PM, PM Out: 6:30 PM
 - COC Earned: 1.5 (auto-calculated: overlap of 17:00-18:30 is 1.5 hrs. Multiplied by 1.0x rate).
6. They click "Add Row" and add the second row for a **Weekend**:
 - Date Worked: 04/12/2025
 - Day Type: Weekend (auto-populated)
 - AM In: 7:00 AM, AM Out: 11:00 AM, PM In: 1:00 PM, PM Out: 6:00 PM
 - COC Earned: 10.5 (auto-calculated: (3 hrs from AM block) + (4 hrs from PM block) = 7 hrs. 7 hrs * 1.5x rate = 10.5).
7. The form shows a Grand Total COC: 12.0 hours.
8. **Validation Step:** The system checks that the 12.0 hours for April does not exceed the 40-hour monthly cap.
9. Checks pass. The HR Staff clicks "Save."
10. Jane's ledger is updated with **12.0 hours** of "**Uncertified**" credits for April 2025.

UF2: HR Staff Certifies Credits (End of Month)

1. It is **May 2, 2025**. The HR Staff is now issuing certificates for all April overtime.
2. They navigate to "**COC Management**" -> "**Generate COC Certificate**."
3. They select Employee: Jane Doe, Month: April, Year: 2025.
4. The system finds the 12.0 hours of "Uncertified" credits from UF1.
5. A form appears. HR enters the Date of Issuance: 05/02/2025.
6. They click "Generate and Log."
7. **Action:** The system finds the 12.0 "Uncertified" hours, switches them to "**Active**", and sets their expiration date.
8. The ledger now shows: 12.0 hours, Earned Month: April 2025, Status: Active, **Valid Until: 05/01/2026**. These hours are now available for Jane to use.

UF3: HR Staff Records Used CTO

1. It is **May 10, 2026**. Employee John Smith (balance: 40 Active hours) requests an 8-hour CTO.
2. His balance consists of:
 - 16 hours (Active, **Valid Until May 15, 2026**)
 - 24 hours (Active, **Valid Until July 1, 2026**)
3. The HR Staff navigates to "**COC Management**" -> "**Log CTO (Use COC)**" and selects John Smith.
4. **Validation Step:** HR enters Hours Used: 8. The system confirms it is a valid block (4 or 8).
5. The HR Staff clicks "Save." The system applies **FIFO (First-In, First-Out)**. It debits 8 hours from the *oldest available active batch*, which is the one valid until May 15, 2026.
6. John's new balance is 32 hours (8 hours valid until May 15, and 24 hours valid until July 1).

UF4: System Manages Expiration

1. It is **May 16, 2026**. The system's automatic daily task runs.
2. It finds John Smith's remaining 8 hours from the batch that was "Valid Until" May 15, 2026.
3. The system creates a new ledger entry: "8 hours Forfeited (Policy: Date of Issuance + 1yr - 1day)."
4. John's total balance is now correctly 24 hours.

UF5: Initial Employee & Balance Setup (Migration)

1. HR needs to add a new employee, John Smith, to the system.
2. HR navigates to "**Employee Management**" and fills in the fields: Last Name: Smith, First Name: John, Status: Active, etc. HR saves the profile.
3. HR then goes to John's newly created profile (or a specific "Migration" tool) and selects the "**Initial Balance Migration**" tool.
4. HR looks at John's old spreadsheet. It shows for "**March 2025**", he earned 30 hours, used 10 hours, and the certificate was issued on "**April 3, 2025**".
5. HR fills out the historical data form:
 - Employee: John Smith
 - Month: March, Year: 2025
 - COC Earned (hrs): 30
 - COC Used (hrs): 10
 - Date of Issuance: 04/03/2025
6. **Validation Step:** The system checks COC Earned (30) is not > 40. It passes.
7. HR clicks "Add Record".
8. The system calculates the Remaining: 20 hours. It *directly* creates a single **Active** credit batch for John: 20 hours, Earned Month: March 2025, **Valid Until: 04/02/2026**.
9. John's starting balance in the new system is now 20 hours. HR repeats this for all his historical monthly records.

6. Validation & Success Metrics

How We Validate the Data (Ensuring Accuracy)

- **V1: Source Document Verification:** All data is entered by trained HR Staff, based on externally approved documents (e.g., signed timesheets, manager emails). The system is the "system of record."
- **V2: Policy Engine:** All calculations and *validations* are handled by the system based on the pre-defined, non-negotiable policy rules (40/mo, 120 total, 4/8 blocks, Date of Issuance expiration, and the strict time window calculations from F2).
- **V3: Immutable Ledger (FIFO):** The transaction history for each employee serves as a permanent, auditable record. The system enforces **First-In, First-Out (FIFO)** logic when debiting COC, ensuring the oldest *Active* credits are always used first.
- **V4: Data Handling:** Invalid or empty string inputs (e.g., for time) are treated as null and

ignored, preventing calculation errors. All calculated values are clamped at ≥ 0 .

How We Measure App Success (EnsCrng Value)

- **Adoption:** 100% of HR Staff are trained and actively use the system as the single source of truth.
- **Efficiency (Leading):**
 - Reduction in time spent by HR Staff manually calculating balances or generating reports (target: 90% reduction).
 - Time-to-answer for an employee balance inquiry (target: < 30 seconds).
- **Accuracy & Compliance (Lagging - The Goal):**
 - 100% enforcement of all policy rules (40/mo, 120 total, 4/8 blocks, Date of Issuance expiration).
 - Accurate, real-time generation of the total COC financial liability report.
 - Zero compliance failures or "I don't know my balance" disputes.