



# TimeWeave

Unified Timeline Analysis

User Manual



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## TimeWeave v1.0.0– User Manual

### 1. Introduction

**TimeWeave** is a visual timeline analysis tool designed to help you understand time-based data by weaving multiple sources into a single, clear, interactive timeline.

It is built to be flexible and approachable. Whether you are analysing digital-forensic artefacts, system activity logs, spreadsheets, or financial records, TimeWeave focuses on one core idea:

**Bring many dates, from many files, together into one unified timeline so patterns, clusters, and anomalies become easy to see.**

You do not need to be technical to use TimeWeave. Most actions are point-and-click, with visual feedback at every step.

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### 2. Core Concepts

Before using TimeWeave, it helps to understand a few key terms used throughout the application.

#### 2.1 Timeline

The **timeline** is the main visual view where events are displayed over time. Each event represents a row from your data that contains a date or timestamp.

Time flows from left to right, allowing you to see:

- When events occurred
- How events cluster together
- Gaps, bursts, or unusual activity

#### 2.2 Event

An **event** is a single point in time generated from your data.

An event is created from:

- One row in a CSV or spreadsheet
- One selected date/time column

Each event can display:

- A title (derived from the data)
- The timestamp
- Additional details from the source row



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## 2.3 Thread

A **thread** represents one imported data source.

Examples:

- One CSV file
- One spreadsheet
- One dataset with multiple timestamps

Each thread:

- Has its own colour
- Can be enabled or disabled
- Can contribute events to the unified timeline

Threads allow you to compare different sources side-by-side while keeping them visually distinct.

## 2.4 Unified Timeline

The **unified timeline** is the combined view where events from all active threads are merged into a single chronological sequence.

This is the heart of TimeWeave and enables:

- Cross-source correlation
- Temporal comparison
- Pattern discovery across datasets

## 2.5 Project

A **project** represents the current working state of TimeWeave.

A project includes:

- Loaded files and threads
- Selected timestamp columns
- Time interpretation settings (date order, time zone handling)
- Histogram and timeline view state

TimeWeave automatically remembers the **last opened project**.

When you restart the application:

- The previous project is reloaded automatically



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- All settings and selections are restored
  - You can continue analysis exactly where you left off

This allows uninterrupted workflows and removes the need to reconfigure settings each time you open TimeWeave.

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### 3. Supported Data

TimeWeave works with structured, tabular data.

#### 3.1 File Types

- CSV files (.csv)
- Spreadsheet files (e.g. Excel)

#### 3.2 Date & Time Columns

TimeWeave automatically scans your data and detects columns that appear to contain date or time values.

You choose:

- Which timestamp column(s) to use
- How those timestamps should be interpreted

Examples of supported formats:

- Full timestamps (date + time)
- Date-only values
- Different regional date orders

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### 4. Importing Data

#### 4.1 Adding a File

1. Add a CSV or spreadsheet file
2. TimeWeave analyses the file structure
3. Detected timestamp columns are presented for selection

Each imported file becomes a **thread**.

#### 4.2 Selecting Timestamp Columns

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For each thread, you choose which timestamp column to use.

Typical examples:

- Created date
- Modified date
- Accessed date
- Transaction date

Only selected timestamp columns generate events.

TimeWeave (v1.0.0) API Ready • http://127.0.0.1:50361/

### Status

Checking /api/health ...

### Run Summary

Threads: 8/8 Timestamps: 11 Generated: 4786 Visible: 4786 (after filters)  
Time: All time • Bucket: day • Collapse: On • Event types: Off  
Parsed: 4786/4786 • Failed: 0 • Ambiguous: 0 • TZ present: 0/4786  
No warnings or failures detected.

### Threads (CSV)

Add CSV files, then select which timestamp column to use for each thread.

C:\Test\_data\DF0024-SF1-Jumplist.xlsx  
"C:\Test\_data\DF0024-SF1-LNKfiles.xlsx"  
"C:\Test\_data\DF0024-SF1-ShellBags.xlsx"  
"C:\Test\_data\DF0026-JWI-Edge.xlsx"  
"C:\Test\_data\DF0026-JWI-US8 Forensic Tracker.xlsx"  
"C:\Test\_data\DF0028-KLI-MicrosoftOfficeFile MRU.xlsx"  
"C:\Test\_data\DF0015-PP1-Awache.xlsx"

Add Threads Run (Generate + Merge)

**DF0015-PP1-mslogon.xlsx**  
C:\Test\_data\DF0015-PP1-mslogon.xlsx  
Timestamp columns: 1 selected  
☒ Date & Times (100%)

Time parsing (this thread)  
Date order: DMY Naive mode: Assume UTC Timezone: (UTC+07:00) Bangkok, Hanoi, Jakarta – SE Asia Standard Time  
Parsed: 480/480 • Failed: 0 • Ambiguous: 0 • TZ present: 0/480

**DF0024-SF1-Jumplist.xlsx**  
C:\Test\_data\DF0024-SF1-Jumplist.xlsx  
Timestamp columns: 2 selected  
☒ Destlist Created Time (UTC +7:00) (100%)  
☒ Destlist Last Modified Time (UTC +7:00) (100%)  
☐ Target Creation Time (UTC +7:00) (100%)  
☐ Target Last Write Time (UTC +7:00) (100%)  
☐ Target Last Access Time (UTC +7:00) (99%)

Time parsing (this thread)  
Date order: DMY Naive mode: Assume UTC Timezone: (UTC+07:00) Bangkok, Hanoi, Jakarta – SE Asia Standard Time  
Parsed: 1360/1360 • Failed: 0 • Ambiguous: 0 • TZ present: 0/1360



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## 5. Time Interpretation & Options

TimeWeave provides controls to ensure timestamps are interpreted correctly.

### 5.1 Date Order

Controls how dates are read when the format is ambiguous:

- DMY (Day-Month-Year)
- MDY (Month-Day-Year)
- YMD (Year-Month-Day)

### 5.2 Naive vs Time-Zone Aware

Some data contains no explicit time-zone information.

TimeWeave allows you to:

- Treat timestamps as already UTC
- Assign a source time zone and convert correctly

This is especially important for forensic and log analysis.

### 5.3 Source Time Zone

When provided, TimeWeave converts timestamps into a consistent internal UTC representation while still displaying them clearly to the user.

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## 6. Timeline View

### 6.1 Event Display

Events are shown as markers on the timeline.

You can:

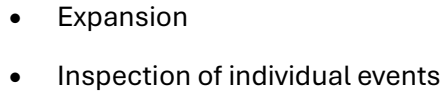
- Hover to inspect
- Click to select
- See event details in the details panel

### 6.2 Collapsing Events

When many events share the same timestamp, TimeWeave may **collapse** them into a single visual group.

This keeps the timeline readable while still allowing:





The histogram provides a high-level overview of activity density over time.

Each bar represents:

- A time bucket
- The number of events in that period

When multiple threads are active, histogram bars are stacked by thread colour.

This allows you to quickly see:

- Which source dominates a time period
- Overlaps between datasets



### 7.3 Stacked View by Event Type (Single Thread)

When only one thread is loaded, TimeWeave can switch the histogram into a different stacked mode.

Instead of stacking by thread, the histogram can be stacked by event type within that single dataset.

In this mode:

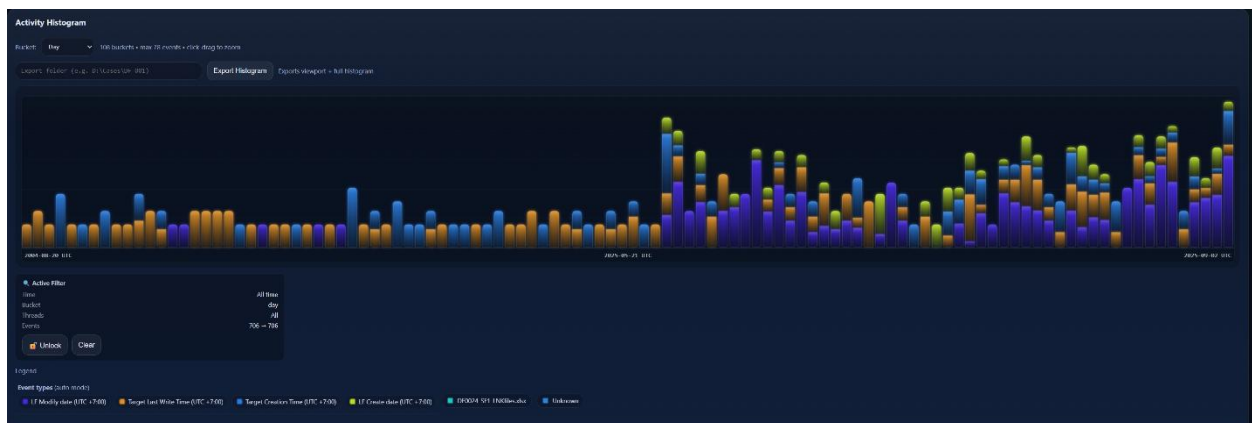
- Each colour segment represents a different timestamp or event type (for example: Created, Modified, Accessed)
- The total height of the bar still represents overall activity
- The internal stack shows *what kind* of events contributed to that activity

This is especially useful when analysing datasets that contain multiple timestamps per record, such as:

- File system artefacts
- Log entries with several date fields
- Financial or transactional records with multiple lifecycle dates

Stacking by event type allows you to:

- See which timestamp type dominates certain periods
- Compare lifecycle behaviour over time
- Identify unusual patterns (for example, many modifications without corresponding creations)





## 7.4 Zooming with the Histogram

You can:

- Click and drag across the histogram
- Zoom the timeline to a specific time range

This is useful for focusing on periods of interest.



## 8. Filtering & Focus

### 8.1 Thread Filtering

Each thread can be:

- Enabled or disabled
- Highlighted via legend interaction

This helps reduce noise when working with many datasets.





## 8.2 Locking

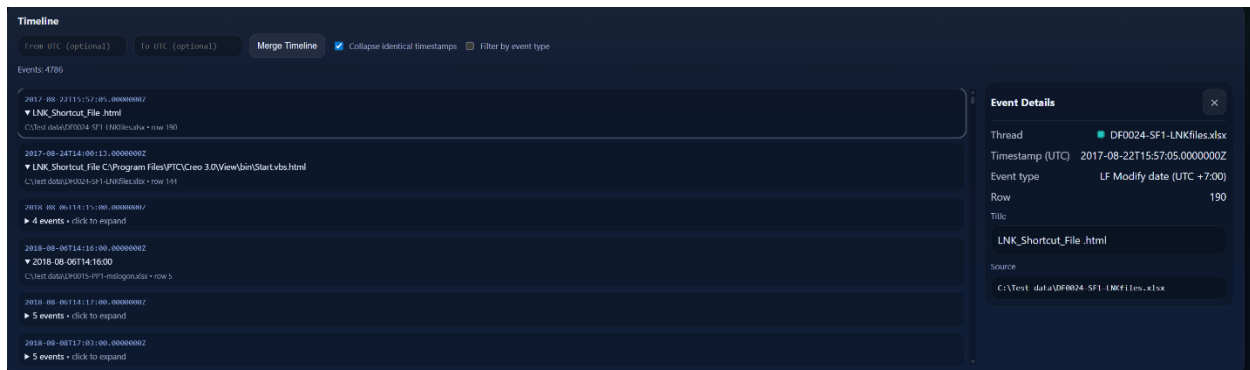
Locking prevents automatic changes when adjusting filters or zoom levels, allowing you to hold a specific view steady while exploring.

## 9. Event Details Panel

When an event is selected, the **Event Details Panel** displays:

- Timestamp
- Source file
- Row index
- Associated data fields

This provides traceability back to the original dataset.



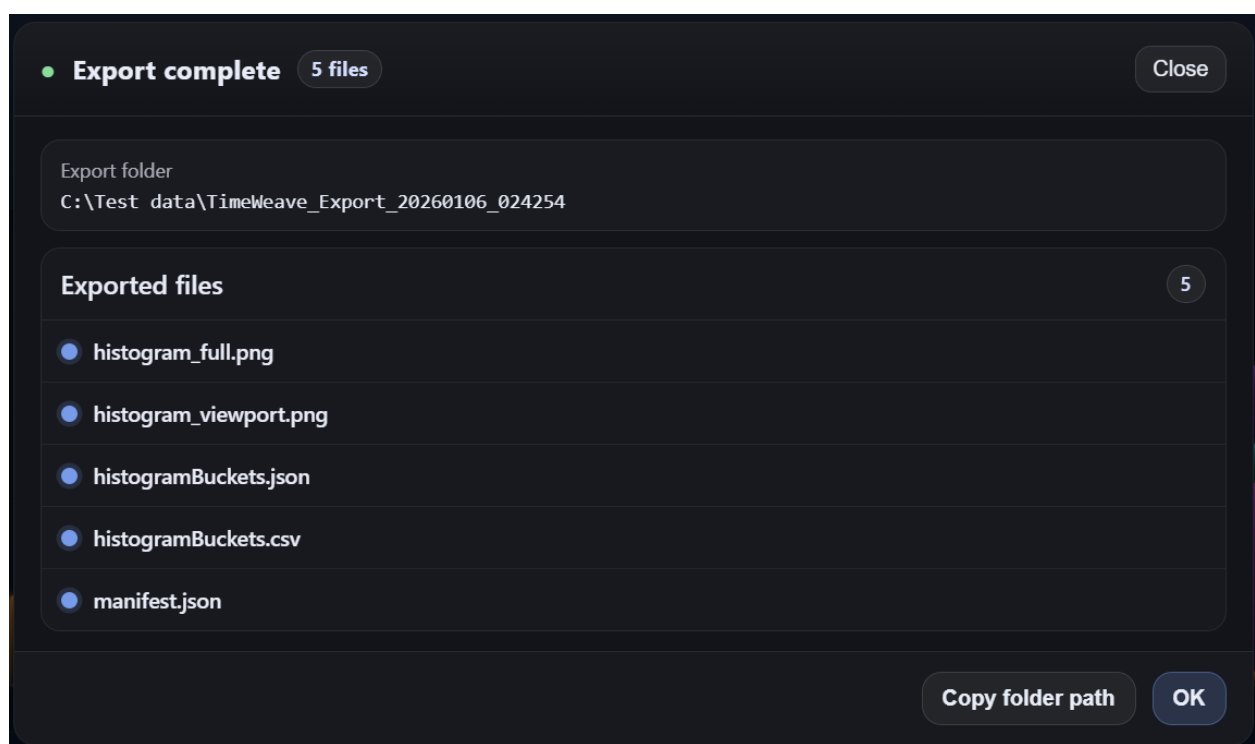
## 10. Exporting

TimeWeave supports exporting analysis results for reporting and external review.

### 10.1 Export Types

Export includes:

- Full histogram image
- Viewport histogram image (what is currently seen on the screen)
- CSV and JSON bucket summaries
- Manifest files describing exported content (with sha256 values)



## 10.2 Purpose of Exports

Exports are designed for:

- Reports
- Case files
- Sharing results without sharing raw data

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## 11. Common Use Cases

### 11.1 Digital Forensics

- Correlating file system events
- Comparing artefacts across sources
- Identifying bursts of activity

### 11.2 Financial & Trading Analysis

- Visualising transactions over time
- Identifying profitable vs loss periods
- Comparing multiple accounts or strategies



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### 11.3 General Data Analysis

- Understanding temporal patterns
- Finding gaps or anomalies
- Exploring large datasets visually

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## 12. Terminology Summary

Term	Meaning
Event	A single timestamped occurrence
Thread	One imported data source
Unified Timeline	Combined chronological view
Histogram	Activity density overview
Bucket	A time slice in the histogram
Collapse	Identical timestamps grouped together
Zoom	Focus on a specific time range

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## 13. Design Philosophy

TimeWeave is built around these principles:

- Visual clarity over raw numbers
- Non-destructive exploration
- Source transparency
- Unified time-based reasoning

The goal is not to replace spreadsheets or databases, but to **see time differently**.

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## 14. Final Notes

TimeWeave is intentionally flexible. Different users may use it in very different ways, but the core workflow remains the same:

1. Import data
2. Select timestamps
3. Explore the unified timeline
4. Zoom, filter, and inspect
5. Export insights

If you understand the timeline, you understand TimeWeave.