

Technical_Guide

Technical guide - Actuarial Closing Platform 3.2

Last verified against build: dev_rc1_20261005 (development copy, release candidate 3.2.0-RC1, store design), 2026-10-05.

Audience: platform administrators, auditors, IT, and anyone who changes the workbook. The monthly procedure is on Closing_Manual (one page) and in the role guides (docs/guides); installation, users, the store and recovery are in Admin_Guide. Every table, name, command and file is listed in Interface_Contract; every sheet in Sheet_Map; every statistical model in Method_Index and Method_Cards; every decision in docs/DECISION_INDEX.md.

0. At a glance

- **What it does.** Every month it finds the companies' payment files in one source folder on a shared network drive and standardises them through a governed column dictionary, removing personal data on the way. It checks completeness, reconciliation and data quality, lets a Preparer submit the month and a different user close it, and appends each closed month to one consolidated, append-only payments store (STORE_PAY.csv). It serves a star-schema Data Model, the 3.0 dashboard and the analytics pages.
- **Two delivery modes.** A FOLDER company delivers one file per month (COMPPAY.xlsx); a CUMULATIVE company delivers one file with every month (COMPPAYALL.xlsx) and the platform takes the open month's rows from it.
- **Who may do what.** Five roles: Viewer (default), Analyst, Preparer, Reviewer and Administrator. The permissions are data (tblCommandPermission) and every command checks them first (section 5).
- **Where the answers are.**
 - Home: who you are, your roles, the one next action (banner) and the checklist.
 - ControlPanel: can the month be closed? 27 checks, each OK, REVIEW or ADVISORY, plus the close gate.
 - Dashboard and the AN_ pages: what was paid, how it develops, what is unusual.
 - DataView and AN_RawView: the lines behind the numbers.
- **Delivery.** A release is delivered in zero state: no company, no period, no location, no user and no log event; the CBRT rates and the column dictionary are kept. An Administrator initialises an installation with Setup (section 3).

1. Architecture and division of labour

Layer	Owner	Where
Ingestion, standardisation, enrichment and the store lines	Power Query (M)	61 queries; source in src/pq
Measures	DAX	Data Model: 153 measures (KPI_Catalog, DAX_Measures)
Statuses, findings, close gate, banner, checklist, analytics pages	worksheet formulas	ControlPanel, Recon, ArchiveLog, KPI_Check, Home, AN_*
Orchestration only: session, permissions, refresh order, store writes, sign-off, logs, exports	VBA	mod_Session, mod_Security, mod_Setup, mod_Cmd, mod_Store, mod_ColumnMap, mod_Log, mod_Archive, mod_Export, mod_Util, frmPassword, ThisWorkbook (src/vba)

VBA never computes a business number. It copies values that Power Query, DAX or formulas have already computed: the store lines are serialised by Power Query (STG_ActiveFact[StoreLine]) and VBA writes the bytes after checking their rows and totals against tblCloseOut.

Query chain.

- Source: fnFileList("Source") > qSrc_Files > qSrc_Active > fnSourceStd (FOLDER files through fnStandardizeFile and tblColumnMap; CUMULATIVE files through fnCumulativeSplit) > qStd_Active.
- Active month: qStd_Active > fnEnrichLines (FX from cfgFXPublished, derived line columns as of this month against the stored keys) > STG_ActiveFact (refreshed before FactPayment).
- Store: qStore_File > fnStoreRead (CURRENT batches of ArchiveLog only).
- FactPayment = store rows + cfgActiveFact; it feeds the Data Model. STG_Summary = tblStoreSummary (recorded at each write) + cfgActiveFact; it never reads the store.
- Writes: STG_StoreAppend (the lines a close appends), STG_Bulk / STG_BulkFiles (Backfill and Rebuild store, refresh role BULK), STG_StoreCheck (per-batch rows and CRC-32, refresh role AUDIT: Verify log and Rebuild store only).
- STG_Discovery (Setup only) runs the file-name parser over the source folder; STG_Rejected lists the files of the active delivery that will not enter the store.

Configuration.

- cfg* queries are the only ones that read Excel.CurrentWorkbook (parameters, dictionary, companies, FX, ArchiveLog, active lines).
- fn* queries hold reusable logic; fnFileList is the one file-system implementation.
- Porting the model to Power BI means replacing the cfg* queries and pointing qStore_File at the store.

2. Sheets

The sheet Sheet_Map lists every sheet with its purpose, audience (read live from tblSheetPolicy), owner and refresh role; docs/SHEET_MAP.md is the same list for readers of the repository. Groups:

Group	Sheets
Platform	Start (macro guard), Home
Closing	ControlPanel, Recon, ArchiveLog, SignOff, DataView, KPI_Check
Reporting	Dashboard, Matrix, Dash_Pivots (hidden)
Analytics	AN_Index, AN_Exec_Life / Pension / NonLife, AN_Trend, AN_Triangle, AN_Lags, AN_Severity, AN_Limits, AN_Anomaly, AN_Watchlist, AN_Backtest, AN_Dispersion, AN_TailFit, AN_RawView, AN_Calc (hidden)
Configuration	Parameters, ColumnMap, DimCompany, RefData, Threshold_Register, FX, AdminConfig
Documentation	Closing_Manual, KPI_Catalog, Method_Index, Method_Cards, Sheet_Map, DecisionRegister, Interface_Contract, Technical_Guide, Admin_Guide, Legend, Changelog, DataModel, DAX_Measures, PivotGuide
Staging and audit	RefreshLog, STG_* (hidden; Show staging), ActivityLog, Security, sh* (very hidden)

Sheet policy. Visibility and protection come from tblSheetPolicy; the first row whose SheetName pattern matches a sheet applies. VisibleTo lists the roles that see a sheet (everyone else: very hidden). EditPermission lists the permissions that open the sheet for typing; everyone else gets it protected. Column rights inside protected sheets come from tblAuditScope ColumnPermissions. The policy is re-applied at every open, after a sign-in and by Hide staging. AN_RawView has its own row above AN_* (Analyst, Preparer, Reviewer only).

3. Installation: platform folder, settings file and Setup

Layout. One platform folder on a shared network drive holds the workbook, ACP_Settings.ini, and the folders Archive (the store, the inbox, controls files, Superseded), Log, Export and src. The source folder is separate; the companies deliver their files there. The platform runs only from a local or network (UNC) folder, never from a web address or a OneDrive / SharePoint synchronised folder (section 15).

Two layers of settings.

- ACP_Settings.ini (UTF-8, key=value) next to the workbook: SourceFolder, PlatformFolder, ArchiveFolder, LogFolder, ExportFolder, SourceCodeFolder, PlatformHomePath, SetupCompletedOn, SetupCompletedBy. Relative paths such as .\Archive are relative to the workbook folder.

- tblParameters (Location rows): the same values resolved to absolute UNC paths. VBA writes them at every open and before every refresh; Power Query reads only tblParameters.
- A mapped drive letter (Z:...) is converted to its UNC path, so every user sees the same text. A change of the resolved values is logged (SYSTEM_SETTINGS_APPLIED).

Setup (Cmd_Setup). A documented dialog sequence (Admin_Guide, section 3): first Administrator and password; source folder; platform folders; validation (exists, reachable, writable, mapped drive to UNC, Archive / Log / Export outside the source folder, not a synchronised or web location); discovery (STG_Discovery proposes the companies with ExpectedFromPeriod and SourceMode, ArchiveStartPeriod = earliest period, ActivePeriod = earliest period not stored; zero-padded twins of a listed company are named as near-misses, never proposed); users and roles; FX check; finish (ACP_Settings.ini, PLATFORM_INITIALISED or SETUP_UPDATED, Refresh, banner). Every change is logged with its old and new value.

4. Opening the workbook

Macro guard. The saved file shows only the Start sheet; every other sheet is very hidden while the file is written and restored right after. With macros disabled a user sees only the Start sheet with the instructions.

Session_Open, in this order; no step can stop the file from opening - problems go to the banner:

1. inputs edited while macros were off are logged ("user unknown");
2. the raw view is emptied;
3. the workbook's Power Query setting "ignore privacy levels" (FastCombine) is switched back on if it was off (logged PRIVACY_LEVELS);
4. the user is identified (Windows logon and the domain of the logon token); ACP_Settings.ini is read, resolved and written into tblParameters; location (web or synchronised folder), copy, missing settings, unreachable folders, read-only file and a foreign lock file are detected;
5. the ActivityLog chain is verified, then the security tables (section 5); external log copies that could not be written earlier are written;
6. visibility, protection and buttons are applied for the user's roles; the session cells (ses*) are written;
7. Home opens; for an Administrator (or the first user of a platform without users) Setup offers itself once.

Banner (Home). Line 1: user, logon, roles. Line 2: one next action, in colour. The first matching state wins:

Code	Colour	Text (English part)
INTEGRITY	red	Role table modified outside the application - Administrator must review
LOCATION	red	The platform is opened from a web address or a synchronised cloud folder ... commands that change data are disabled
COPY	red	You are working on a COPY ... commands are disabled
SETTINGS	red	Settings file not found or folder unreachable:
READONLY	amber	The file is open read-only (another user has it open:)
LOCK	amber	A long command is running: by
(Setup)	amber	Setup not completed
(role)	blue	You have no role - read-only
otherwise	from the checklist	the first open item

The full bilingual texts are in docs/guides/MESSAGE_CATALOGUE.md (generated from tblUIText).

5. Roles, permissions and sign-in

Identity. The Windows logon and the domain of the logon token - DOMAIN\logon. Environment variables are logged but never trusted. There are no shared role passwords.

Roles (a user may hold several; tblUserRole, very hidden sheet Security):

Role	May do
Viewer	read what is visible (Dashboard, analytics pages); export the Dashboard / page PDF. Default for every unlisted user
Analyst	Viewer + DataView and AN_RawView (show and export lines)
Preparer	Analyst + Refresh, reconciliation, nil returns, check explanations, Submit for review, open a source file from the raw view (with a reason)
Reviewer	Analyst + Refresh, Reject submission, Close period, closing pack, archive notes, open a source file (with a reason)
Administrator	Setup, users and roles, sign-in, re-open, Backfill, Rebuild store, Lock / Unlock column map, Refresh reference data, ColumnID verification, source export, Verify log, changelog, staging sheets, lock clearing, Refresh, and the administrator tables

tblCommandPermission holds Command x Role = Y / N, plus Elevation (needs the sign-in), StateChanging (blocked in read-only, copied, wrongly located or unconfigured sessions), NeedsSetup and UsesLock. Edit_* rows are the rights to type in a table. RequirePermission is the first step of every Cmd_*; a denied attempt is logged as SECURITY with the result DENIED.

Administrator sign-in (Cmd_AdminLogin). Windows identity plus the administrator's own password, typed in the masked window frmPassword (if the window is missing or damaged, sign-in is refused; it never falls back to an unmasked box). Only PBKDF2-HMAC-SHA256 (600,000 iterations, 16-byte random salt) is stored. Five wrong passwords lock the sign-in for 30 minutes; a sign-in lasts 30 minutes and is renewed by every administrator action. There is no master password.

Segregation of duties. The user who submitted a period can never close it. FourEyesRequired = N is an Administrator waiver (password again, severity HIGH; FOUR_EYES stays REVIEW).

Integrity of the security tables. Every change of tblUserRole, tblCommandPermission or the credential identities goes through Cmd_ManageUsers or Setup and logs a SECURITY event with the SHA-256 checksum of the tables. At open the tables are compared with the last signed event; a difference (or a broken ActivityLog chain) degrades everyone to Viewer with the red INTEGRITY banner until an Administrator of the last signed state reviews and accepts (Cmd_ManageUsers ACCEPT) or IT restores from backup.

6. Monthly close - how the commands work

- **Refresh (Cmd_RefreshAll).** Reads ACP_Settings.ini into tblParameters (stops on a copy, a wrong location or missing settings), unprotects the sheets, refreshes the FXFETCH connection and appends new CBRT rates, then the MODEL and STAGING connections in tblRefreshPlan order with manual calculation: DimCompany, DimDate and DimFXRate only when the SHA-256 signature of their inputs changed (or ForceDimensionRefresh = Y); STG_ActiveFact before FactPayment; the Data Model pivots are re-queried once against the complete model. Then one full calculation, the store and ArchiveLog chain checks (archStoreStatus, archChainStatus), the ActivityLog chain, a RefreshLog row when every connection succeeded, and re-protection. It holds ACP.lock while it runs. A failure with the Power Query privacy message reports FIREWALL_BLOCKED. The result ends with the reference-data status.
- **Close gate (cpCloseGate).** OPEN when STG_CURRENT is OK and every BLOCKING check is OK or explained for the active period. Six checks can never be explained away (3.2.0-RC1, DECISIONS_P3 P3-138): while RESTATEMENT, ARCHIVE_INTEGRITY, COLUMNMAP_LOCK, LOG_INTEGRITY, PRIVACY or FILES_UNEXPECTED is REVIEW the gate stays BLOCKED with the bilingual message GATE_HARD_REVIEW, whatever the explanation. ADVISORY checks never block.
- **Submit for review (Cmd_SubmitForReview, Preparer).** Gate OPEN; SignOff SUBMITTED with the data fingerprint (StagingRefreshedAt, ActiveRows, HashTotal, GrossTRY); saves.
- **Close period (Cmd_ClosePeriod, Reviewer).** Blocked unless the latest sign-off is SUBMITTED, the closing user is not the submitting user (unless waived), the fingerprint is unchanged, the gate is OPEN and the column map is locked and unchanged. It then checks that the lines to append (STG_StoreAppend) equal tblCloseOut in rows and totals and that every line passed the whitelist gate, appends them to the store as batch - (copy, append, size check, atomic swap), copies the month's source files to Archive\Inbox<LoadBatch>\ (read-only), records the batch totals in

tblStoreSummary and the SHA-256 of the store, writes SignOff CLOSED, the controls file (read-only), the ArchiveLog row sealed into the chain, clears the explanations, moves ActivePeriod to the next month, refreshes and reports the integrity of the new batch.

- **Reject submission (Cmd_RejectSubmission, Reviewer).** SignOff REJECTED with the reason.

7. Commands

Button	Command	Roles	Saves	What it does
Refresh	Cmd_RefreshAll	Preparer, Reviewer, Administrator	no	Section 6
Submit for review	Cmd_SubmitForReview(comment)	Preparer	yes	Gate OPEN; SignOff SUBMITTED
Close period	Cmd_ClosePeriod(comment)	Reviewer	yes	Section 6
Reject submission	Cmd_RejectSubmission(reason)	Reviewer	yes	SignOff REJECTED
Closing pack	Cmd_ExportClosingPack	Reviewer	no	PDFs, controls snapshot, logs as CSV
Show / Export lines (DataView)	Cmd_ViewCompanyMonth / Cmd_ExportCompanyMonth(company, period)	Analyst, Preparer, Reviewer	no	One company-month from the store or the active month
Show lines / Export CSV / Open source file (AN_RawView)	Cmd_RawView / Cmd_RawExport / Cmd_OpenSourceFile(reason)	Analyst, Preparer, Reviewer (open: Preparer, Reviewer)	no	Section 13
PDF (Dashboard, AN_pages)	Cmd_ExportDashboardPDF	everyone	no	The page as PDF (never AN_RawView)
Setup	Cmd_Setup(answers)	Administrator (first user: bootstrap)	yes	Section 3
Users and roles	Cmd_ManageUsers(action, account, roles, displayName)	Administrator	yes	ADD, REMOVE, RESETPWD, CHANGEPWD, PERM, LIST, ACCEPT
Administrator sign-in / sign-out	Cmd_AdminLogin(pwd) / Cmd_AdminLogout	Administrator	no	Section 5
Re-open period	Cmd_ReopenPeriod(period, reason)	Administrator	yes	Section 8
Backfill history	Cmd_Backfill(confirmText, throughPeriod)	Administrator	yes	Section 8; once, at installation
Rebuild store	Cmd_RebuildStore(confirmText)	Administrator	yes	Section 8; exceptional
Lock / Unlock column map	Cmd_LockColumnMap(approval, confirmText) / Cmd_UnlockColumnMap(reason)	Administrator	yes	Section 12
Refresh reference data	Cmd_RefreshReference	Administrator	no	Section 14
Verify selected ColumnIDs	Cmd_VerifyColumnIDs(columnIDs)	Administrator	no	Stamps VerifiedBy / VerifiedOn
Verify log	Cmd_VerifyLog	Administrator	no	ActivityLog chain and every store batch (rows, CRC-32)
Export source code	Cmd_ExportSourceCode	Administrator	no	src/pq, src/vba (when readable), src/contract
Add changelog entry	Cmd_AddChangelogEntry(...)	Administrator	yes	The only way to add to tblChangelog
Show / Hide staging	Cmd_ShowStaging / Cmd_HideStaging	Administrator	no	Staging and log sheets read-only / policy re-applied
Clear lock	Cmd_ClearLock	Administrator	no	Removes an ACP.lock older than 2 hours

Calling commands without dialogs. Every Cmd_* writes exactly one ActivityLog row, including when it fails or is denied; its result starts with OK, WARNING, BLOCKED, DENIED, CANCELLED or ERROR. A front end or a scheduler calls Application.Run "Api_SetSilent", True, then Application.Run "Cmd_...", arguments, and reads Application.Run("Api_LastResult"). Excel can reject a COM call while it finishes asynchronous calculations (0x800AC472 / 0x8001010A): the caller waits and retries.

8. Period management and the store

- **The store.** \STORE_PAY.csv holds the payment lines of every closed month: UTF-8 without BOM, comma, RFC 4180 quoting, CRLF, one header row (the current dictionary's layout, STG_StoreHeader); platform columns (PeriodKey, LoadBatch, CompanyID, SegmentKey, SourceFile, SourceRowNo), the whitelisted model fields, the frozen FX columns (RateToTRY, GrossAmountTRY, NetAmountTRY), the frozen derived line columns (CaseKey, duplicate and chronology flags, IsFirstPayment, ...) and a RowHash. Personal data never reaches it. Only the platform writes it, always copy-and-swap; it is read-only between writes.
- **Batches.** Each close appends one batch, LoadBatch - (n = 1 for the first close of the period, 2 after a re-open and re-close). ArchiveLog holds one row per batch: RecordedRows, RecordedHashTotal (sum of GrossAmount across currencies - a control total), RecordedGrossTRY, RecordedDigest (CRC-32 of the batch's lines), StoreSHA256 (the whole store after the write) and ChainHash (SHA-256 over the previous ChainHash and the batch's immutable fields).
- **Frozen at close.** The derived line columns are computed once, as of the close, with the parameters in force then; later parameter changes affect new months only unless the store is rebuilt (P3-81). Later changes of source files or of tblFXRate never change a stored month.
- **Integrity at every refresh.** One SHA-256 of the store file against the last recorded StoreSHA256 (archStoreStatus), the ArchiveLog chain (archChainStatus), and the model's rows and totals per period (pvtStoreCheck) against the recorded values. Any difference turns IntegrityStatus REVIEW and ARCHIVE_INTEGRITY a failed BLOCKING check. Verify log localises a difference: it re-reads every batch (rows and CRC-32, STG_StoreCheck).
- **Inbox.** At close and in the bulk build the month's whitelisted source files are copied to \Inbox<LoadBatch>\ (read-only, never deleted). A CUMULATIVE company's ALL file is copied into every batch it delivered. Rebuild store reads only the inbox.
- **Completeness.** ARCHIVE_COMPLETE: one CURRENT batch per month from ArchiveStartPeriod to the month before ActivePeriod. COMPLETENESS: every expected company has data or a nil return in every closed month.
- **Re-open (Administrator, exceptional).** Cmd_ReopenPeriod needs a stored month and a reason. The batch stays in the store (append-only) and its ArchiveLog row becomes SUPERSEDED; the controls file moves to Archive\Superseded\ with a time stamp; SignOff REOPENED; ActivePeriod = that month. The re-close appends batch -2.
- **Backfill (Administrator, once at installation).** Cmd_Backfill bulk-builds the store from the source folder: STG_Bulk reads BulkChunkMonths months per refresh (default 12), computes the store rows month by month with the cross-month flags as of each month, appends one batch per month, copies the files to the inbox, writes one ArchiveLog row and one SignOff row (BACKFILL, FourEyes NOT APPLIED) per month and saves after each chunk. The newest month stays open and is closed normally. Files that fail the whitelist gate are listed and never stored. Restartable: stored months are skipped. Typed confirmation BACKFILL.
- **Rebuild store (Administrator, exceptional).** Cmd_RebuildStore (typed REBUILD, column map locked) re-reads every CURRENT batch from the inbox with the current dictionary layout, writes a new store, moves the old one to Archive\Superseded, re-records the digests (with a note when a digest changed) and seals the chain again. Needed after a model field was added or removed (the header then differs and ARCHIVE_INTEGRITY is REVIEW) and as the recovery path when the store file is damaged (docs/guides/STORE_RUNBOOK.md).

9. Audit trail

Layer	Question it answers	Where
ActivityLog	Who ran which command, edited which input or tried what, with what result?	very hidden sheet + authoritative external log folder

Layer	Question it answers	Where
RefreshLog	What did staging look like after each logged refresh?	RefreshLog sheet
Edit audit	Which input changed from what to what, and was it allowed?	ActivityLog EDIT / SECURITY events (shadow copies <i>sh*</i>)
ArchiveLog chain	Has any stored batch or the store file changed since it was written?	ArchiveLog (ChainHash, StoreSHA256), Verify log

Chained checksum. Checksum = lowercase hex SHA-256 (Windows CNG) of the UTF-8 text

EventNo|TimestampUTC|LogonUser|EnvUser|ExcelUser|Machine|EventType|Command|Parameters|Result|DurationSec|PlatformVersion|Algorithm|PrevChecksum. Every event is also written as one read-only CSV in LogFolder; LOG_INTEGRITY compares the two.

Edit audit. Workbook_SheetChange compares every table in tblAuditScope with its very hidden shadow copy; allowed changes are logged, changes the user may not make are reverted and logged as SECURITY EDIT_DENIED.

10. FX - CBRT rates

- **Automatic fetch** (FXAutoFetch = Y): at every Refresh, qFX_CBRT reads the daily bulletins after the last stored rate; Refresh appends the OK rates to tblFXRate, so each bulletin is downloaded once. The rate is FXRateType (ForexBuying) / Unit.
- **In the store.** The active month is enriched with the published rate at the payment date (cfgFXPublished: carried forward at most FXMaxCarryForwardDays); the rate and the TRY amounts are frozen in the store at close.
- **Manual mode.** FXAutoFetch = N; rates are typed on sheet FX (Admin_Guide, section 8). Only dates leave the workbook.

11. Control framework

Every check is a row of tblControl with a stable CheckID, a Result count, a Threshold (0), a Severity and a Status: OK, REVIEW (BLOCKING or REVIEW check failed) or ADVISORY (amber, never blocks). The Finding is built from the data; the Action says where to look and what to do (bilingual for the 3.2 checks). What to do when each check fails, by role: docs/guides/CONTROLS.md.

#	CheckID	Severity	What it verifies
1	STG_CURRENT	BLOCKING	Staging refreshed for the current period and source folder, and logged by Cmd_RefreshAll
2	FILES_EXPECTED	BLOCKING	Every expected company delivered a file or a nil return
3	FILES_DUPLICATE	BLOCKING	No duplicate copy of a source file
4	FILES_NEARMISS	BLOCKING	No near-miss file name in the active delivery (including zero-padded company IDs)
5	FILES_UNEXPECTED	BLOCKING	No files from unexpected companies
6	RECON	BLOCKING	Totals reconcile to the independent source
7	CHRONOLOGY	BLOCKING	loss <= notification <= decision <= payment
8	DUP_KEYS	BLOCKING	No duplicate payment keys (this and earlier stored months)
9	FX_RATES	BLOCKING	An FX rate for every foreign-currency line
10	FX_FETCH	BLOCKING	CBRT fetch complete up to the latest payment date
11	DATES	BLOCKING	Dates plausible
12	MAPPING_DQ	BLOCKING	Column mapping and conversion issues
13	OUTLIERS	BLOCKING	Payment lines >= OutlierThresholdTRY reviewed
14	PRIVACY	BLOCKING	No personal data in the staging output
15	ARCHIVE_COMPLETE	BLOCKING	One CURRENT stored batch per closed month
16	ARCHIVE_INTEGRITY	BLOCKING	Store file, ArchiveLog chain and model totals unchanged since each write
17	ACTIVE_OPEN	BLOCKING	Active period not already stored
18	COMPLETENESS	BLOCKING	Company x month completeness

#	CheckID	Severity	What it verifies
19	DICTIONARY	BLOCKING	Column dictionary consistent
20	COLUMNID_VERIFIED	ADVISORY	ColumnIDs verified by command
21	REFDATA	BLOCKING	Reference tables clean
22	POLICY_OPEN	BLOCKING	No decision Open
23	FOUR_EYES	BLOCKING	Four-eyes enabled
24	LOG_INTEGRITY	BLOCKING	ActivityLog chain and external copy intact
25	RESTATEMENT	BLOCKING	A CUMULATIVE file restates no stored month
26	COMPANY_CHANGES	REVIEW	No new company and no change of delivery mode (explainable)
27	COLUMNMAP_LOCK	BLOCKING	The column map is locked and unchanged (Close, Backfill and Rebuild store also refuse to run otherwise, even when explained)

Adding a check. Add a row to tblControl (new CheckID, Result formula, Threshold 0, Severity, Finding, Action); add it to Interface_Contract and to docs/guides/CONTROLS.md; if a dashboard KPI depends on it, add a caveat row to tblKPIcaveat; record it with Add changelog entry.

12. Column dictionary (ColumnMap) and the lock

- One row per source header spelling; matching ignores case, Turkish letters, spaces and punctuation. A field enters the model only if every row of its CanonicalName says IncludeInModel = Y and PersonalData = N (fail-safe). Groups: 1 Core, 2 Analytical, 3 Branch, 4 Personal data (blocked), 5 Not modelled.
- New company or new layout: Refresh; STG_DQ lists every UNMAPPED HEADER; an Administrator classifies it (Admin_Guide).
- **Lock.** The store is laid out by the dictionary, so the model-relevant columns (SourceHeader, CanonicalName, DataType, IncludeInModel, PersonalData, Group) are locked by a SHA-256 signature (Lock column map). COLUMNMAP_LOCK is BLOCKING and Close, Backfill and Rebuild store refuse to run while the map is unlocked or changed. Changing the model fields = unlock (reason, HIGH), edit, Refresh, lock, Rebuild store (Admin_Guide, section 15). ColumnID, notes and the verification stamps are outside the signature.

13. Data Model, dashboard and analytics pages

- **Star schema.** FactPayment (store + active month; one row per payment line) with DimDate, DimCompany, DimFXRate and the reference tables (DimSegment, DimPaymentNature, DimBranch, DimProduct, DimChannel, DimPartner, DimGeography, DimCurrency, DimAgeBand, bands, DevMonth, AnParam, tblThreshold, tblUIText, tblObsFlag). The default date relationship is the reporting period (FactPayment[PeriodDate]); payment, loss, notification, decision and documents-complete dates are inactive relationships used by the "by ... Date" measures. Segment = FactPayment[SegmentKey] (company type, or Unassigned).
- **3.0 dashboard.** KPI cards (cube cells bound to slicers), four PivotCharts on Dash_Pivots, the Matrix heat map. No new cube cell is added anywhere (BL-22).
- **Analytics pages.** No pivots and no cube cells on the pages: long, flat Data Model pivots on the hidden sheet AN_Calc (36-month analysis window relative to the active period), read by worksheet formulas, dynamic arrays and LAMBDA names. Statuses come from tblThreshold (all DRAFT; FIXED levels not approved are placeholders "*" that are never counted). Text with numbers is Turkish (anNum, anPct). Methods: Method_Cards. Reading guide: PivotGuide and docs/guides/ANALYST_VIEWER.md.
- **Extra method pages (DRAFT).** AN_Backtest (rolling-origin backtest of the AN_Trend forecast), AN_Dispersion (Mack-style standard error on the AN_Triangle selection), AN_TailFit (tail index by threshold) - worksheet formulas on the existing pivots and the triangle grid only.
- **Raw view.** AN_RawView lists lines of several companies x months from the store (CURRENT batches) and the active month, whitelisted columns only, reconciles them to tblStoreSummary, exports CSV; the lines are removed before every save and are never exported as PDF.

14. Refresh cost and the reference data

- The 16 static reference tables are worksheet tables linked into the model with refresh role MANUAL: Refresh All does not process them. After an Administrator edits one of them, Refresh reference data (Cmd_RefreshReference) loads them; RefData row 3 turns red when a checksum of the tables differs from the one stored at the last reference refresh.
- Measured worst case at 120 months of data (every dimension refreshed in one run): 316.9 s, accepted for 3.2.0 (BL-63); a normal refresh with unchanged dimensions about 250 s; 36 months about 130-180 s. Page interaction at most 0.6 s.

15. Protection, location and privacy

- **Sheet protection** is a deterrent; the edit audit is the control. The protection key is random per installation (secSheetKey).
- **VBA project** locked for viewing by the owner after the source export (Admin_Guide, section 11).
- **Location guard.** A web address or a OneDrive / SharePoint synchronised folder (workbook or Source, Archive, Log, Export) gives the red LOCATION banner and every state-changing command is refused: two synchronised copies of the store, the logs or the lock file would diverge.
- **Power Query privacy.** The queries combine workbook parameters with file reads in one step, so they rely on the workbook's "ignore privacy levels" setting (re-set at open). A machine policy that enforces privacy levels for every file stops the refresh (FIREWALL_BLOCKED); IT must allow the per-file setting (docs/guides/GO_LIVE_CHECKLIST.md, item 1). A redesign that survives the enforcement is backlog 3.3 (BL-65).
- **Personal data** never reaches a sheet, the Data Model, the store, the raw view or an export.

16. Concurrency, copies and the lock file

- **One writer.** Excel lets one user edit the file; a second user opens it read-only (amber banner), and commands that change data are blocked.
- **ACP.lock** (workbook folder) is written by the long state-changing commands (Refresh, Close, Re-open, Setup, Backfill, Rebuild store, Lock / Unlock column map, Refresh reference data) and removed at their end. An Administrator clears a lock older than 2 hours (Cmd_ClearLock, severity HIGH).
- **Copies.** A workbook opened anywhere other than PlatformHomePath shows the red COPY banner.

17. Troubleshooting

The per-control actions are in docs/guides/CONTROLS.md, the messages in docs/guides/MESSAGE_CATALOGUE.md, store problems in docs/guides/STORE_RUNBOOK.md. The most frequent symptoms:

Symptom	Cause	Fix
Only the Start sheet is visible	Macros are disabled	Follow the Start sheet; IT sets a Trusted Location or signs the project
Red banner LOCATION	Opened from a web address or a synchronised folder	Open the platform from the agreed network share (Admin_Guide, section 17)
Refresh says FIREWALL_BLOCKED	A machine policy enforces privacy levels per file	IT allows the per-file setting (GO_LIVE_CHECKLIST item 1)
Close BLOCKED: column map	COLUMNMAP_LOCK not OK	Administrator: restore the approved map or unlock, change, lock, Rebuild store
ARCHIVE_INTEGRITY REVIEW	Store file, chain or model totals differ	Do not edit the store; Administrator runs Verify log; STORE_RUNBOOK
RESTATEMENT REVIEW	A cumulative file changed a stored month	Re-open the month or have the company correct the file (CUMULATIVE_COMPANY.md)

Symptom	Cause	Fix
A file is missing from the month	It is in STG_Rejected (not listed, outside window, near-miss, mode mismatch)	Admin_Guide, section 14
Close BLOCKED: data changed after the submission	Refresh or source change after Submit	The Preparer submits again
Close BLOCKED: segregation of duties	The submitting user tried to close	A different Reviewer closes
RefData row 3 is red	A reference table was edited	Administrator: Refresh reference data

18. Extending the platform

- **New company.** Setup discovery proposes it, or an Administrator adds a DimCompany row (CompanyID exactly as in the file name, type, ExpectedFromPeriod, SourceMode) > Refresh > classify its UNMAPPED HEADERS > Refresh.
- **New model field.** Unlock column map, ColumnMap rows with IncludeInModel = Y, PersonalData = N and a DataType, Refresh, lock, Rebuild store (the stored months get the new column from the inbox files).
- **New check.** Section 11. **New page.** Reuse the AN_Calc pivots; record its refresh cost (the 120-month worst case is the budget). **New command.** Pattern Log_Begin > Guard > Do_Name > Log_End; a tblCommandPermission row (accepted by an Administrator); Interface_Contract; a button.
- **Changes are recorded** with Add changelog entry.

19. Build and source

- src/pq, src/vba and src/contract hold the source; the workbook is changed only by Excel through COM (never by a file library such as openpyxl, which would strip the Data Model, pivots and connections).
- Builds: tools/build/Build-Release.ps1 (3.0.0), tools/build/Build-Store.ps1 (3.2 store), tools/build/analytics/Build-WP*.ps1 (analytics pages, WP-11 documentation), tools/build/Build-ZeroState.ps1 (zero-state template). Every folder comes from tools/config/paths.json. Tests: tools/build/analytics/Test-AnPages.ps1 (T1), tools/dev/Test-Harden.ps1 and Test-Store.ps1 (governance, store), tools/verify_*.py (ground truth), tools/check_docs.py (documentation). Repository map: FOLDER_MAP.md.

20. Known limitations

Open items with owners and release targets are in docs/BACKLOG.md (triaged into 3.2.1, 3.3, 4.0 and won't-do). Items that need people or infrastructure outside the workbook are in docs/HANDOVER_3.2.0.md and docs/guides/GO_LIVE_CHECKLIST.md.