

PRD — JPE Mod Health, Exception & CRM Suite (Mod Sentinel)

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1. Product Vision

Mod Sentinel is a companion stack to the JPE Sims 4 Translation Suite that:

- Does everything Better Exceptions does for Sims 4 exceptions (and more).
- Adds a first-class mod inventory and organizer (import, tagging, search, health scoring).
- Provides safe delete, rollback, quarantine, and restore operations for mods.
- Exposes a CRM-style ticket view over:
 - Local game exceptions.
 - Remote reports (forums, mod sites, support feeds).
- Connects tightly to the JPE/JPE-XML engine and project model.
- Integrates with TS4 Rebels as a metadata and issue source, while respecting their ToS and EA's EULA.

This is not just “read lastException.txt and display it.” This is a mod operations console for power players, creators, and troubleshooters.

2. Goals and Non-Goals

2.1 Goals

1. Better Exceptions parity and extension

- Read game error logs (lastException.txt, lastUIException.txt, CAS CC logs, and similar).
- Detect mod/script/tuning conflicts, broken CC, junk files, duplicates, and patch day breakage.
- Provide confidence scoring for culprits, including ranked implicated mod lists.

2. Mod management and organization

- Mirror the game Mods/ directory into an indexed mod inventory.
- Provide multi-key search and filtering (creator, file type, patch level, health status, tags).
- Group mods by project, creator, category, and source site.

3. Safe destructive operations

- Delete, disable, or quarantine mods safely via managed operations.
- Roll back to previous snapshots of the Mods folder or specific mod projects.
- Maintain per-mod change history, with timestamps, reasons, and associated exceptions.

4. CRM-style error and issue tracking

- Represent each exception, scan result, or remote report as a ticket.
- Provide states: open, triaged, in-progress, resolved, archived.
- Provide views by mod, creator, patch, and source.

5. RSS and web issue aggregation

- Pull in error and issue signals from mod-related sites and feeds where available.
- Map external issue items to locally installed mods when possible.

6. TS4 Rebels integration

- Integrate with TS4 Rebels as a source of CC/mod metadata and issue signals, within their rules.
- Use them as:
 - A source of CC and mod metadata (names, creators, versions, known issues when public).
 - A feed of issue chatter for CRM tickets (links only, no paywalled scraping).

2.2 Non-Goals

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- Not a save-game editor.
- Not a CAS/mesh/texture editor.
- Not a piracy tool for paywalled CC or vault ripper; TS4 Rebels integration is metadata and linking only.
- Not a replacement for any dedicated malware scanning tool, though it may surface such tool alerts if integrated.

3. Primary Users and Use Cases

3.1 User Types

- Power Players: Maintain large mod folders and want quick answers about what is broken and what to remove.
- Mod Authors: Want to see how their mods behave across different setups and track issues.
- Curators and List Makers: Maintain “modlists,” collections, or CC vault references and need health and organization.
- Community Support: Discord helpers, TS4 Rebels volunteers, and others who need reproducible diagnostics to troubleshoot.

3.2 Key Use Cases

1. Patch Day Scan

- After a Sims 4 patch, the user runs a Patch Scan.
- Mod Sentinel:
 - Reads new exception logs.
 - Scans installed mods and known issue feeds.
 - Flags broken or suspicious mods, with confidence scores and links to known reports.

2. Crash or UI Exception Triaging

- The game throws an exception during gameplay or UI interaction.
- Mod Sentinel:
 - Picks up new log files.
 - Correlates stack traces and mod paths.
 - Provides a short, readable explanation and a ticket recording the full context.

3. Mod Folder Cleanup

- The user wants to de-duplicate and clean their Mods folder.
- Mod Sentinel:
 - Finds duplicates, junk, and outdated files.
 - Suggests remedial actions.
 - Allows one-click archive and delete with automatic snapshot.

4. Rollback a Bad Experiment

- The user installs new mods and the game becomes unstable.
- They revert their Mods state to the snapshot taken before the install and verify stability.

5. TS4 Rebels-aware Diagnostics

- A mod from TS4 Rebels is implicated by an exception.
- The ticket automatically attaches:
 - Mod metadata (name, creator, URL).
 - Links to TS4 Rebels info pages or threads when identifiable.
- Community support staff have one-click context into Rebels resources.

4. System Context

Mod Sentinel sits at the intersection of:

- Local game environment
- Sims 4 directory (logs, Mods, saves).
- Better Exceptions-style logs (exceptions, UI exceptions, CAS glitches).

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- JPE Translation Suite
 - Optional mapping of broken tuning or script resources into JPE/JPE-XML for readability.
 - Use of the JPE diagnostics layer for plain-English explanations of tuning issues.

- External sources

- Mod distribution and CC sites.
- Community issue sources (forums, help boards, guides).
- TS4 Rebels info website and any public feeds or announcements they provide.

5. Feature Breakdown

5.1 Exception Intake and Analysis Engine

Objective: Achieve feature parity with Better Exceptions while exposing richer APIs and CRM integration.

Functional Requirements:

1. Log Sources

- R1.1: Monitor Sims 4 exception log outputs such as lastException.txt, lastUIException.txt, CAS CC logs, and similar.
- R1.2: Detect new logs on file write or on-demand refresh.
- R1.3: Allow configuration of custom log paths for future game updates or non-standard setups.

2. Exception Parsing and Classification

- R2.1: Parse Python stack traces and internal Sims error reports.
- R2.2: Distinguish:
 - Gameplay exceptions.
 - UI exceptions.
 - CAS and CC-related glitches.
- R2.3: Classify error root cause as script mod, tuning mod, CC asset, core game bug, or unknown.
- R2.4: Group repeated occurrences of identical or similar exceptions.

3. Mod Attribution

- R3.1: Map stack frames and resources to mod file paths where possible, using file paths, resource identifiers, and known frameworks.
- R3.2: Produce a list of implicated mod files with confidence percentages.
- R3.3: When multiple mods could be responsible, provide a ranked list with clear reasoning.
- R3.4: Track recurring offenders across sessions to refine attribution.

4. Noise Filtering

- R4.1: Detect common false-positive exceptions (e.g., animation-only errors that do not break gameplay) and offer to ignore or downgrade them by default.
- R4.2: Provide settings to tune sensitivity and noise thresholds.
- R4.3: Allow users to whitelist specific exception patterns they want to ignore in future scans.

5. Reports

- R5.1: Generate a short summary (human-readable) suitable for casual users.
- R5.2: Generate a detailed technical report with full trace, implicated mods, and proposed actions.
- R5.3: Produce a machine-readable error object for CRM and UI integration.
- R5.4: Store exception reports in a structured format for future reference and analytics.

5.2 Mod Import and Inventory Management

Objective: Maintain a complete, queryable catalog of all mods and CC installed.

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Functional Requirements:

1. Folder Scanning

- R6.1: Scan the user's Mods folder recursively.
- R6.2: Identify script mods (.ts4script), package files (.package), JPE/JPE-XML project folders, and configuration files (INI, CFG, JSON).
- R6.3: Detect duplicates using file hashes and metadata.
- R6.4: Allow scheduled or manual rescans after user changes.

2. Mod Identity and Metadata

- R7.1: For each mod, determine:
 - Filename and path.
 - Mod root folder (for multi-file mods).
 - Basic metadata such as size and last modified time.
- R7.2: When available, extract or store:
 - Creator name.
 - Mod name or title.
 - Version information.
 - Source URL (e.g., CurseForge, personal site, TS4 Rebels).
- R7.3: Allow manual editing of metadata and linking mods to external pages when auto-detection is not possible.

3. Mod Health Index

- R8.1: Compute a "health score" per mod based on:
 - Number and severity of exceptions linked to the mod.
 - Known remote issues from CRM feeds and tickets.
 - Time since last confirmed compatibility with a game patch.
- R8.2: Classify mods as Healthy, Degraded, Broken, or Unknown.
- R8.3: Surface the health status prominently in mod tables and detail pages.

4. Organization and Tagging

- R9.1: Allow users to assign tags to mods such as gameplay, CAS, buildbuy, script, Rebels-CC, and others.
- R9.2: Automatically tag mods based on source and file type when detectable.
- R9.3: Provide smart collections, including:
 - Potentially broken mods.
 - Duplicate or overlapping mods.
 - Recently added or updated mods.
- R9.4: Enable saving and sharing of tag schemas or collections for power users.

5.3 Delete, Disable, Quarantine, and Rollback

Objective: Let the user take strong action without risking irreparable damage to their setup.

Functional Requirements:

1. Safe Delete and Disable

- R10.1: Provide actions per mod:
 - Disable: Move from Mods into an internal disabled folder outside of the active Mods tree.
 - Delete: Move into a quarantine or trash folder first, with an option to permanently delete.
- R10.2: Record actions in a per-mod change history including timestamp, action type, and user.

2. Quarantine

- R11.1: Mods flagged as broken or suspicious can be moved to a quarantine area.
- R11.2: Quarantined mods are excluded from the Mods folder but remain restorable.
- R11.3: Allow viewing and filtering of quarantined mods by reason and severity.

3. Rollback and Snapshot

- R12.1: Support full Mods folder snapshots:
 - Before installing new mods.

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- Before major game patches.
- R12.2: Snapshots contain:
 - Full file list and directory structure.
 - File hashes.
 - Optional configuration for JPE-related projects.
- R12.3: Allow rollback to previous snapshots with a clear difference preview (which mods will be added, removed, or changed).
- R12.4: Support per-mod rollback to earlier versions when previous versions are stored in an archive.
- R12.5: Provide a safety check and summary before applying any rollback.

4. History and Audit Trail

- R13.1: Maintain for each mod:
 - First seen time.
 - Last update time.
 - Associated exceptions and tickets.
 - Actions taken (disable, delete, restore) and which user performed them.
- R13.2: Surface this history in the UI and CRM views for traceability.

5.4 Mod Lookup and Relationships

Objective: Make it trivial to answer “Where did this mod come from?” and “What else does it affect?”

Functional Requirements:

- R14.1: Search mods by:
 - Name, creator, file name, folder path.
 - Source URL.
 - Tags, category.
 - Health status.
- R14.2: Display relationships such as:
 - Mods frequently appearing in the same exceptions.
 - Mods that share required frameworks or dependencies.
- R14.3: Show all tickets and exceptions linked to a given mod in a single view.
- R14.4: Allow export of mod inventories and relationships for documentation or support purposes.

5.5 CRM-style Ticketing Layer

Objective: Treat every exception and external issue as a trackable ticket.

Functional Requirements:

1. Ticket Model

- R15.1: Define ticket fields including:
 - Ticket ID.
 - Summary.
 - Description.
 - Source type (local_exception, external_forum, mod_site_issue, ts4rebels_post, and others).
 - Status: open, triaged, in_progress, resolved, archived.
 - Priority: low, normal, high, urgent.
 - Linked mods (one or more).
 - Linked exception records or logs.
 - External links (forums, mod pages, Rebels URLs, documentation).
 - Owner or assignee (optional).
- R15.2: Maintain ticket history: comments, status changes, and timestamps.

2. Ticket Creation

- R16.1: Automatically create tickets when:

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- A new, previously unseen exception pattern occurs.
- A remote RSS or site entry matches an installed mod.
- R16.2: Allow manual ticket creation for user-reported issues or notes.
- R16.3: De-duplicate tickets by grouping similar or identical incidents.

3. Views and Filters

- R17.1: Provide views including:
 - My tickets.
 - Tickets by mod.
 - Tickets by patch or game version.
 - Tickets by source type.
- R17.2: Provide a feed-style list of open or recently updated tickets with quick filters by severity and source.
- R17.3: Allow sorting by priority, recency, and number of linked exceptions.

4. Notifications

- R18.1: Optional local notifications for:
 - New critical tickets.
 - Tickets linked to recently changed mods.
- R18.2: Optional integration with external notification channels such as email or webhook for power users and community staff.

5.6 RSS and Web Issue Aggregation

Objective: Pull signals from mod and CC sites into the CRM without scraping anything that violates site rules.

Functional Requirements:

1. Source Connectors

- R19.1: Provide a configurable list of feeds and endpoints including:
 - Mod distribution site project feeds where exposed.
 - Forum threads and categories tagged for mod and CC issues.
 - Creator announcement feeds.
 - TS4 Rebels info or announcements where publicly exposed.
- R19.2: For each connector, define:
 - Poll interval.
 - URL.
 - Parsing rules for title, body, and links.

2. Parsing and Normalization

- R20.1: Extract for each feed item:
 - Headline or subject.
 - Summary or snippet.
 - Origin link.
 - Detected keywords such as mod name, creator, and game version.
- R20.2: Match feed items against locally installed mods using:
 - Name similarity.
 - Known source URL.
 - Creator names or handles.

3. Ticket Creation from Feeds

- R21.1: When a feed item matches installed mods, create a ticket or attach the feed item to an existing ticket.
- R21.2: Tag tickets with source and a reliability score based on connector configuration.
- R21.3: Provide a way to ignore specific feed items or mark them as not relevant.

4. Rate Limits and Compliance

- R22.1: Respect each site's robots.txt and terms of service; prefer public feeds and APIs.
- R22.2: Allow users to disable or configure individual sources and polling frequencies.

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- R22.3: Avoid scraping authenticated or paywalled content.

5.7 TS4 Rebels Integration

Objective: Treat TS4 Rebels as a first-class metadata and issue source without violating their rules.

Functional Requirements:

1. Rebels Identity and Metadata

- R23.1: When a mod is sourced from a TS4 Rebels link (either user-provided or detectable in metadata), tag it with source:ts4rebels.
- R23.2: Store for Rebels-linked mods:
 - Rebels page URL.
 - Creator handle as displayed on Rebels.
 - Any available version or build label.
- R23.3: Allow users to manually associate a mod with a Rebels page URL.

2. Rebels Issue Feeds

- R24.1: Connect to public TS4 Rebels info or FAQ channels where they provide updates or feeds.
- R24.2: Parse posts mentioning specific creators or mod names and create or update related tickets.
- R24.3: Provide clear source labeling so users know the origin of the information.

3. Rebels-aware Ticket Context

- R25.1: When a ticket involves a Rebels-sourced mod, show:
 - A direct link to the Rebels page for that mod or creator.
 - Links to any known Rebels help or FAQ pages relevant to the mod.
- R25.2: Allow users to open a Rebels support context manually; do not attempt to log in or read authenticated pages automatically.

4. Ethics and Compliance

- R26.1: Do not bypass sign-in, paywalls, or protected vaults.
- R26.2: Do not mirror vault content or redistribute CC or mod files hosted on Rebels.
- R26.3: Provide configuration flags to disable or limit Rebels integration where necessary.
- R26.4: Keep integration strictly to metadata and linking, not content duplication.

6. Data Model (High-Level)

6.1 Core Entities

- Mod
 - mod_id, name, creator, source, root_path, files, tags, health_status, snapshots, history.
- ModFile
 - path, hash, type, parent mod_id.
- ExceptionRecord
 - Raw exception data parsed from logs, classification details, linked mod_ids.
- Ticket
 - Metadata, status, priority, source, linked mods, linked exceptions, external links, and history.
- Snapshot
 - Snapshot ID, timestamp, Mods folder manifest, description.
- FeedItem
 - Source ID, original URL, parsed summary, matched mods, linked ticket.

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7. Core Workflows

7.1 Patch Day Workflow

1. The user updates Sims 4.
2. Mod Sentinel:
 - Prompts for a pre-patch snapshot if one does not exist.
 - Offers a Patch Scan:
 - Reads new exception logs.
 - Queries feeds for patch-related posts.
 - Updates mod health statuses.
3. Tickets are created for each broken or suspected mod with links to relevant posts.

7.2 Exception to Ticket to Action

1. The game throws an exception and logs are updated.
2. Mod Sentinel's watcher:
 - Parses new exceptions.
 - Attributes them to mods.
 - Creates or updates a ticket.
3. The UI surfaces:
 - A ticket summary describing the issue and likely cause.
 - Suggested actions such as quarantining the mod, disabling it, or rolling back to a previous snapshot.
4. The user takes action and ticket status is updated accordingly.

7.3 TS4 Rebels-linked Issue

1. TS4 Rebels posts a warning for a creator's CC conflicting with a new patch.
2. The feed connector pulls the item and matches it to locally installed mods by creator or name.
3. For each matching mod:
 - A ticket is created with source ts4rebels.
 - Links to the Rebels post and relevant pages are attached.
4. The user sees Rebels warnings against affected mods and can act accordingly.

8. UX and UI Overview (High-Level)

- Dashboard
 - Summary of mod health.
 - Ticket feed showing recent and critical issues.
 - Patch status hints and scan shortcuts.
- Mods View
 - Table or list with filters by health, source, type, tags.
 - Bulk actions for disabling, quarantining, and snapshotting.
- Ticket and CRM View
 - Kanban or list view by ticket status.
 - Detail pane with logs, mods, links, and comments.
- Snapshots and Rollback
 - Timeline of snapshots with diff overview.
 - Guided rollback process with confirmation and safety checks.
- Settings
 - Log paths and scan options.
 - Feed connectors and polling frequency.
 - TS4 Rebels integration toggles.
 - Risk level and sensitivity controls.

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9. APIs and Extensibility

- Public API for:
 - Listing mods, tickets, snapshots, and exception records.
 - Registering new connectors and feeds.
 - Integrating with the JPE engine for deeper explanation features.
- Plugin Support:
 - Additional analyzers for different types of mods or custom frameworks.
 - Auto-tagging plugins for specific ecosystems or creators.
 - External tools can consume structured reports for further automation.

10. Security, Privacy, and Legal

- Store local paths, logs, and exception data only on the user's machine by default.
- Any future cloud sync must:
 - Be explicitly opt-in.
 - Anonymize sensitive data where reasonable.
 - Provide clear controls for what is uploaded.
- TS4 Rebels and other source integration must:
 - Not bypass authentication or paywalls.
 - Not mirror or redistribute restricted content.
 - Respect robots.txt files and terms of service.
 - Ensure compliance with EA's EULA and mod distribution policies as they evolve.

11. Delivery Phases

11.1 v1.0 (Core)

- Exception parsing and Better Exceptions—class analysis.
- Mod inventory and health scoring.
- Basic delete, disable, and quarantine operations.
- Local-only tickets without external feed integration.
- Snapshots and rollback with simple UI.

11.2 v1.5 (CRM and Feeds)

- Full ticket system with status and priority.
- RSS and feed connectors for major mod and support sites.
- Basic TS4 Rebels metadata tagging and link association.
- Expanded filtering and views for triage workflows.

11.3 v2.0 (Ecosystem and TS4 Rebels Focused)

- Advanced TS4 Rebels-aware workflows.
- Relationship graph between mods and issues.
- Advanced UI and automation for community support staff and power users.