

Enchiridion Roadmap

This document outlines potential improvements, new features, code cleanup opportunities, and technical debt for the Enchiridion project - a terminal novel writing assistant with AI integration for Lean 4.

Feature Proposals

[Priority: High] Auto-Save Functionality

Description: Implement the auto-save feature that is already configured but not implemented.

Rationale: The Config structure already has `autoSaveEnabled` and `autoSaveIntervalMs` fields, but the application does not use them. Auto-save is critical for a writing application to prevent data loss.

Affected Files: - `/Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/UI/App.lean`
- `/Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/State/AppState.lean`

Estimated Effort: Medium

Dependencies: None

[Priority: High] Project Load Dialog

Description: Add the ability to load existing projects from disk, not just save.

Rationale: Currently the application only supports saving projects and always starts with a sample project. Users need to be able to open their previously saved work.

Affected Files: - `/Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/UI/App.lean` -
`/Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/UI/Update.lean` - `/Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/State/AppMode.lean`
(`AppMode` already has `.loading`)

Estimated Effort: Medium

Dependencies: None

[Priority: High] New Project Creation Dialog

Description: Add ability to create a new project with custom title and author from the UI.

Rationale: Currently the application always starts with a hardcoded sample project ("The Great Adventure"). Users should be able to create new projects with their own titles.

Affected Files: - `/Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/UI/App.lean` -
`/Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/UI/Draw.lean` - `/Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/State/AppMode.lean`

Estimated Effort: Medium

Dependencies: None

[Priority: Medium] Character Relationship Tracking

Description: Add the ability to define and track relationships between characters.

Rationale: Novel writing often requires tracking complex character relationships. The current Character model has basic traits but no relationship data.

Affected Files: - /Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/Model/Character.lean
- /Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/Core/Json.lean - /Users/Shared/Projects/le
(Notes panel)

Estimated Effort: Medium

Dependencies: None

[Priority: Medium] Scene Outline/Summary View

Description: Add a bird's-eye view showing all scene synopses in a condensed format.

Rationale: Writers often need to see the overall story structure at a glance. The current navigation only shows titles, not synopses.

Affected Files: - /Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/UI/Draw.lean
- /Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/State/Focus.lean (new panel mode) - /Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/UI/Layout.lean

Estimated Effort: Medium

Dependencies: None

[Priority: Medium] Chapter/Scene Reordering

Description: Allow drag-and-drop style reordering of chapters and scenes via keyboard.

Rationale: Story structure often changes during writing. Currently there is no way to reorder chapters or scenes without deleting and recreating them.

Affected Files: - /Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/State/AppState.lean
- /Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/UI/Update.lean - /Users/Shared/Projects/le

Estimated Effort: Medium

Dependencies: None

[Priority: Medium] Scene/Chapter Rename Inline

Description: Allow renaming chapters and scenes directly in the navigation panel.

Rationale: Currently chapters and scenes are created with generic names ("Chapter 1", "Scene 1") and there is no way to rename them. Users need to be able to give meaningful titles.

Affected Files: - /Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/UI/Update.lean
- /Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/State/AppState.lean

Estimated Effort: Small

Dependencies: None

[Priority: Medium] Undo/Redo Stack

Description: Implement undo/redo functionality for text editing and structural changes.

Rationale: Essential for any text editor. Currently there is no way to undo accidental deletions or changes.

Affected Files: - /Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/State/AppState.lean
- /Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/UI/Update.lean - Potentially requires changes to terminus TextArea

Estimated Effort: Large

Dependencies: May require terminus enhancements

[Priority: Medium] AI Provider Selection

Description: Support multiple AI providers beyond OpenRouter (e.g., direct OpenAI, Anthropic, local models via Ollama).

Rationale: Users may prefer different AI providers for cost, privacy, or capability reasons.

Affected Files: - /Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/AI/OpenRouter.lean
- /Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/Core/Config.lean - New files for each provider

Estimated Effort: Large

Dependencies: None

[Priority: Medium] Chat History Persistence

Description: Save and restore AI chat history with the project.

Rationale: Chat history provides context for ongoing AI conversations but is lost when the application restarts.

Affected Files: - /Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/State/AppState.lean
- /Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/Model/Project.lean -
/Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/Core/Json.lean

Estimated Effort: Medium

Dependencies: None

[Priority: Medium] Search and Replace

Description: Implement find and replace functionality across the current scene or entire novel.

Rationale: Essential editing feature for any writing application.

Affected Files: - /Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/UI/Update.lean
- /Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/UI/Draw.lean - /Users/Shared/Projects/lean

Estimated Effort: Medium

Dependencies: None

[Priority: Low] Word Goal Tracking

Description: Allow users to set daily/session word count goals with progress tracking.

Rationale: Many writers use word count goals to maintain productivity. The infrastructure exists (word count calculation) but no goal tracking.

Affected Files: - /Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/Core/Config.lean
- /Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/State/AppState.lean -
/Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/UI/Draw.lean

Estimated Effort: Small

Dependencies: None

[Priority: Low] Multiple Export Formats

Description: Support export to additional formats beyond Markdown (e.g., DOCX, EPUB, plain text).

Rationale: Different publishing workflows require different formats.

Affected Files: - /Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/State/AppState.lean
(exportToMarkdown) - New export modules

Estimated Effort: Large

Dependencies: Would require external libraries or FFI

[Priority: Low] Theme Support

Description: Allow customization of UI colors and styles.

Rationale: Writers often prefer different color schemes, especially for long writing sessions.

Affected Files: - /Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/Core/Config.lean
- /Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/UI/Draw.lean

Estimated Effort: Medium

Dependencies: None

[Priority: Low] Plugin System

Description: Allow extensions to add custom AI prompts, export formats, or UI panels.

Rationale: Different writers have different workflows; a plugin system would allow customization.

Affected Files: Architecture-level change

Estimated Effort: Large

Dependencies: None

Code Improvements

[Priority: High] Proper Timestamp Implementation

Current State: `Timestamp.now` uses `IO.monoNanosNow` which returns monotonic time, not Unix epoch time. The conversion to milliseconds is also incorrect.

Proposed Change: Use proper system time for timestamps. The comment says “milliseconds since Unix epoch” but the implementation uses monotonic nanoseconds.

Benefits: Correct timestamps for file metadata and display.

Affected Files: - /Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/Core/Types.lean
(lines 39-43)

Estimated Effort: Small

[Priority: High] Error Handling Improvements

Current State: Many operations silently fail or return empty results. For example, `Config.loadFromFile` catches all exceptions and returns `none`.

Proposed Change: Use proper error types with descriptive messages. Consider a unified Result monad or Except-based error handling.

Benefits: Better debugging, clearer error messages for users.

Affected Files: - /Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/Core/Config.lean
- /Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/Storage/FileIO.lean -
/Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/AI/OpenRouter.lean

Estimated Effort: Medium

[Priority: Medium] Refactor Update Function

Current State: The update function in `UI/Update.lean` is a large chain of if-else statements that is difficult to maintain.

Proposed Change: Consider using pattern matching more extensively, or a command pattern to decouple key handling from actions.

Benefits: Better maintainability, easier to add new shortcuts.

Affected Files: - /Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/UI/Update.lean

Estimated Effort: Medium

[Priority: Medium] Consolidate JSON Serialization

Current State: Each model type has manual `ToJson`/`FromJson` instances with repetitive boilerplate.

Proposed Change: Consider using deriving for JSON instances where possible, or create helper macros to reduce boilerplate.

Benefits: Less code duplication, fewer serialization bugs.

Affected Files: - /Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/Core/Json.lean
- /Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/Model/Novel.lean - /Users/Shared/Projects/
- /Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/Model/WorldNote.lean -
/Users/Shared/Projects/lean-workspace/enrichidion/Enrichidion/Model/Project.lean

Estimated Effort: Medium

[Priority: Medium] Separate Streaming Logic

Current State: AI streaming is handled inline in `runLoop` which makes the function very long and complex.

Proposed Change: Extract streaming management into a dedicated module or state machine.

Benefits: Cleaner code, easier to test streaming behavior.

Affected Files: - /Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/UI/App.lean
- /Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/AI/Streaming.lean

Estimated Effort: Medium

[Priority: Medium] Type-Safe Panel Focus Handling

Current State: Panel-specific update functions are called based on enum matching. The current approach works but could be more type-safe.

Proposed Change: Consider using typeclasses or a more structured approach to panel handling.

Benefits: Compile-time guarantees that all panels are handled correctly.

Affected Files: - /Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/UI/Update.lean
- /Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/UI/Draw.lean

Estimated Effort: Medium

[Priority: Low] Word Count Algorithm Improvement

Current State: Word count uses simple space splitting which may be inaccurate for edge cases.

Proposed Change: Implement a more robust word counting algorithm that handles punctuation, multiple spaces, etc.

Benefits: More accurate word counts.

Affected Files: - /Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/Model/Novel.lean
(Scene.updateWordCount)

Estimated Effort: Small

[Priority: Low] Configurable Layout

Current State: Panel sizes are hardcoded percentages in `LayoutConfig`.

Proposed Change: Allow users to resize panels via keyboard or configuration.

Benefits: Better user experience for different screen sizes and preferences.

Affected Files: - /Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/UI/Layout.lean
- /Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/Core/Config.lean

Estimated Effort: Medium

Code Cleanup

[Priority: High] Remove Legacy PromptType

Issue: `PromptType` enum in `AI/Prompts.lean` is marked as legacy with a comment “use `AIWritingAction` instead” but is still present and used by `buildPrompt`.

Location: `/Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/AI/Prompts.lean`
(lines 83-115, 118-139)

Action Required: 1. Remove the `PromptType` enum 2. Remove the `buildPrompt` function that uses it 3. Ensure all callers use `buildWritingActionPrompt` instead

Estimated Effort: Small

[Priority: Medium] Duplicate parseStringArray Functions

Issue: The helper function `parseStringArray` is defined identically in both `Character.lean` and `WorldNote.lean`.

Location: - `/Users/Shared/Projects/lean-workspace/Enchiridion/Model/Character.lean`
(lines 73-77) - `/Users/Shared/Projects/lean-workspace/Enchiridion/Model/WorldNote.lean`
(lines 114-118)

Action Required: Move the function to `Core/Json.lean` and export it for shared use.

Estimated Effort: Small

[Priority: Medium] Unused Config Fields

Issue: `autoSaveEnabled` and `autoSaveIntervalMs` config fields are parsed and saved but never used.

Location: `/Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/Core/Config.lean`
(lines 17-18)

Action Required: Either implement auto-save feature or remove the unused fields.

Estimated Effort: Small (removal) or Medium (implementation)

[Priority: Medium] Missing File Existence Check

Issue: `Storage.fileExists` reads the entire file to check if it exists, which is inefficient.

Location: `/Users/Shared/Projects/lean-workspace/Enchiridion/Enchiridion/Storage/FileIO.lean`
(lines 67-72)

Action Required: Use `IO.FS.metadata` or similar to check file existence without reading content.

Estimated Effort: Small

[Priority: Low] Inconsistent Error Message Formatting

Issue: Error messages throughout the codebase have inconsistent formatting (some with prefixes, some without).

Location: Multiple files in AI and Storage modules

Action Required: Standardize error message format, possibly with a central error type.

Estimated Effort: Small

[Priority: Low] Magic Numbers in Draw.lean

Issue: Several hardcoded values in the draw functions (e.g., popup sizes, column widths).

Location: /Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/UI/Draw.lean

Action Required: Extract magic numbers into named constants.

Estimated Effort: Small

[Priority: Low] Test Coverage for UI Logic

Issue: While model and state tests are comprehensive, UI update logic has no direct tests.

Location: /Users/Shared/Projects/lean-workspace/enchiridion/Tests/Main.lean

Action Required: Add tests for updateNavigation, updateEditor, updateChat, updateNotes functions.

Estimated Effort: Medium

[Priority: Low] Missing Documentation Comments

Issue: Some public functions lack documentation comments explaining their purpose and usage.

Location: Various files, particularly in UI modules

Action Required: Add doc comments to all public functions.

Estimated Effort: Small

API Enhancements

[Priority: Medium] Builder Pattern for Project Creation

Description: Currently creating a project with all optional fields requires many struct updates. A builder pattern would improve ergonomics.

Example:

```
-- Current
let novel := { novel with genre := "Fantasy", synopsis := "..." }

-- Proposed
let novel := Novel.builder "Title" |>.author "Name" |>.genre "Fantasy" |>.build

Affected Files: - /Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/Model/Novel.lean
- /Users/Shared/Projects/lean-workspace/enchiridion/Enchiridion/Model/Project.lean
```

Estimated Effort: Small

[Priority: Low] Query DSL for Project Content

Description: Add a simple query DSL for finding content in the project (e.g., scenes containing a character name, notes by category).

Example:

```
project.findScenes (fun s => s.content.containsSubstr "Sarah")  
project.findNotes (·.category == .location)
```

Affected Files: - /Users/Shared/Projects/lean-workspace/enrichedion/Enrichedion/Model/Project.lean

Estimated Effort: Small

Technical Debt Summary

Category	High	Medium	Low
Features	3	8	4
Improvements	2	5	2
Cleanup	2	3	4
API	0	1	1
Total	7	17	11

Recommended Next Steps

1. **Immediate (High Priority):**
 - Remove legacy PromptType enum (cleanup)
 - Fix timestamp implementation (improvement)
 - Implement project load functionality (feature)
2. **Short-term (Medium Priority):**
 - Implement auto-save using existing config (feature)
 - Add scene/chapter renaming (feature)
 - Consolidate duplicate code (cleanup)
3. **Long-term (Low Priority):**
 - Consider undo/redo implementation
 - Explore plugin system architecture
 - Add comprehensive UI testing