prd03 desktop jpe studio

PRD 03 — Desktop Application (JPE Studio)

1. Product Vision
JPE Studio is the primary desktop IDE for Sims 4 mod authors working in JPE and JPE-XML. It exposes the Core Translator Engine through a friendly UI that supports inspection, editing, validation, diagnostics, and building of mods.

2. Target Users
- Mod authors who work primarily on desktop.
- Beginners learning tuning by reading JPE alongside raw XML.
- Power users managing large mod projects.

3. Core Features
3.1 Project and File Management
- R1.1: Open mod projects from folders and recursively discover supported files.
- R1.2: Display a project tree, grouping files by mod, resource type, or folder.
- R1.3: Track which files are original XML, generated XML, JPE sources, or JPE-XML sources.

3.2 Inspectors and Dual View
- R2.1: For any XML tuning file, show:
  Raw XML view.
  JPE interpretation (plain-English summary).
  JPE-XML view, if available.
- R2.2: Provide diff views for:
  XML vs XML (changes between versions).
  XML vs JPE-generated XML.
- R2.3: Provide an "Explain this" action to show a narrative explanation of a piece of tuning.

3.3 JPE Editor
- R3.1: Syntax highlighting and indentation for JPE DSL.
- R3.2: Inline diagnostics showing errors and warnings from the engine.
- R3.3: Autocomplete for known resources (traits, buffs, statistics) and language constructs.
- R3.4: Quick actions:
  Generate XML.
  Preview tuning.
  Show underlying IR for advanced users.

3.4 Wizards
- R4.1: Interaction Wizard: prompts for participants, triggers, tests, and effects and outputs JPE.
- R4.2: Buff/Moodlet Wizard: guides users through creating new buffs and moodlets.
- R4.3: Trait Wizard: helps define traits, associated buffs, and modifiers.

3.5 Build and Export
- R5.1: "Build Mod" action generates XML tuning and supporting files into a build directory.
- R5.2: Optionally compress build outputs into an archive for integration with other tools.
- R5.3: Show build results with a summary of warnings and errors.
- R5.4: Persist error reports to disk and link them from the UI.

3.6 Diagnostics Integration
- R6.1: Problems pane lists all errors and warnings for the project, grouped by file and resource.
- R6.2: Clicking a problem navigates directly to the relevant file and line, highlighting the snippet.

- R6.3: The project tree highlights files and folders based on highest severity of diagnostics.
- R6.4: Provide commands to open the raw error report (JSON or text) for advanced users.

3.7 Sync and Mobile Integration
- R7.1: Optional sign-in to a sync service.
- R7.2: Upload JPE and JPE-XML files for editing on iPhone.
- R7.3: Receive JPE changes from mobile, merge or review differences, and rebuild locally.
- R7.4: Display build and diagnostics results originating from cloud or mobile-triggered builds.

4. Non-Functional Requirements
- Cross-platform support with a primary focus on Windows.
- UI responsiveness with large mod directories and big files.
- Long-running tasks (build, heavy validation) should run in background workers to keep the UI responsive.
- Provide sensible defaults and clear error messaging for new users.