User Manual: CompDX

Autonomous AAF Dialogue Editing and Leveling Engine

CompDX is an advanced tool designed to automate the most tedious tasks of dialogue editing. Through algorithmic analysis of AAF sequences, CompDX detects voice, eliminates bleed between multiple microphones, levels loudness to broadcast standards, and applies seamless transitions, delivering a clean session ready for final restoration.

1. Session Management (Top Controls)

This section manages the input and output of your project's metadata, ensuring that synchronization and timecode remain intact.

- **Import AAF:** Opens the explorer to load the .aaf file exported from the DAW. CompDX scans the session structure and extracts the metadata of the referenced audio clips.
- **Output Folder:** Defines the destination directory. The newly generated AAF file and any audio files rendered during the process will be saved here, keeping your original session safe from overwrites.
- **AAF Info:** Displays a summary of the loaded file's status, confirming that the metadata has been successfully read.
- **Presets (Top Right Corner):** A comprehensive manager for saving your configurations. Ideal for standardizing the workflow on episodic projects.
    - **[+]** Creates and names a new preset with the current settings.
    - **[💾]** Saves any modifications to the active preset.
    - **[🗑]** Deletes the selected preset.

2. Track Panel (Tracks)

Located in the left column, this panel reads and lists all available tracks within the imported AAF file, indicating the track name and the number of detected clips (e.g., 1. A1 (13 clips)).

- **Checkboxes:** Allow you to arm or disarm specific tracks. Uncheck the tracks you do not wish to affect (for example, temporary sound effects tracks, reference music, or ambient channels) so that CompDX excludes them from processing and passes them intact to the final AAF.

3. Processing Engines

The core of CompDX operates in four sequential phases, mimicking the logical workflow of a human dialogue editor.

Phase 1: Dialogue Detection

This phase uses a VAD (Voice Activity Detection) algorithm to analyze the waveform, separate the human voice from background noise or silence, and generate the initial cuts.

- **VAD Threshold:** The sensitivity level of the detector (from 0.05 to 0.95). A low value (e.g., 0.20) will catch whispers and very faint voices, but could trigger false cuts due to background noise. A high value (e.g., 0.80) will require the voice to be very clear and loud to be detected.
- **Pre-Padding:** Adds milliseconds (ms) of audio before the point where the voice is detected. It is a vital safety "cushion" so as not to cut off the natural breaths of the dialogue or the soft attack consonants (like 'S' or 'F').
- **Post-Padding:** Adds milliseconds (ms) of audio after the voice ends. It preserves the natural decay of words, final consonants, and the natural room reverberation (adjacent room tone).
- **Minimum Pause:** Defines the minimum silence time (in ms) that must exist between two words for the system to decide to separate them into two distinct clips. If the dialogue pauses for 400ms, but your slider is at 600ms, CompDX will keep the entire phrase joined in a single clip, avoiding a fragmented edit.

Phase 2: Bleed Control

Specifically designed for multitrack scenarios (like several lavalier microphones recording simultaneously). This phase analyzes the session "vertically" to decide who is actually speaking and cut the microphones that are only picking up the sound of the other actor (spill/bleed).

- **Enable Bleed Rejection (Vertical Judge):** Enables or disables the vertical cross-evaluation algorithm.
- **Max Lag:** The maximum expected acoustic delay time (in ms) between microphones. Since sound travels at approx. 1 foot per millisecond, this slider tells the algorithm how much time difference (phase) is acceptable to consider a sound as bleed from the other microphone due to the physical distance between the actors.
- **Kill Threshold:** The percentage of aggressiveness with which the system will cut the secondary track. A high threshold (e.g., 85%) means the system must be very sure it is a bleed to "kill" (mute/delete) the clip on that track, always prioritizing the microphone with the most present and direct signal.

Phase 3: Leveler Clip by Clip

Once the dialogue is cut and clean of bleed, this phase stabilizes the gain of each individual clip to meet commercial broadcast standards transparently.

- **Enable LUFS Automation:** Turns the automatic leveling engine on or off.
- **Target LUFS:** Defines the average loudness target (measured in Loudness Units relative to Full Scale). If you set it to -24.0 LUFS (ATSC A/85 broadcast standard), the algorithm will autonomously adjust the gain of the clips (Clip Gain) to gravitate towards that volume, ensuring intelligibility.
- **Leveling Interval:** Defines the "time window" (in ms) in which the algorithm calculates the volume average to apply the changes.
    - **Short intervals:** React quickly, aggressively controlling micro-dynamics (ideal for highly inconsistent dialogue).
    - **Long intervals:** Average larger blocks, preserving the natural macro-dynamics of the performance without a noticeable pumping effect or excessive compression.

Phase 4: Batch Fades

The final cleanup phase. Applies automated transitions at the boundaries of each generated clip to ensure perfect zero-crossings, eliminating any click, pop, or digital artifact (zero-crossing errors). The values are measured in frames ('f') relative to the AAF frame rate.

- **Fade In:** Length of the volume ramp-up at the beginning of each clip.
- **Fade Out:** Length of the volume ramp-down at the end of each clip.
- **Crossfade:** Length of the cross transition (crossfade) that will be applied automatically in cases where two clips overlap or are exactly contiguous.

4. Bottom Controls

- **Seat: Active (Bottom Left Corner):** Status indicator of your Kraxton Labs license. Shows if your software is properly authorized and ready to process audio on the current workstation.
- **Progress Bar:** Provides visual feedback and status text (e.g., "Ready.") regarding the reading, algorithmic calculation, and final rendering of the file.
- **PROCESS Button:** The execution engine. Upon clicking, CompDX consolidates the settings of the 4 phases, analyzes the AAF data, applies the mathematical calculations, inscribes the new gain/fades metadata, and writes the final file to your Output Folder.