### Architecture Overview

The **Improved Modular Media Player System** refactors the old monolithic player into a flexible and maintainable architecture using **Structural Design Patterns**.

It is divided into several independent modules:

* **Media Source** (Adapter Pattern)
  + connects to different sources like local files, HLS streams, and remote APIs.
* **Rendering Engine** (Bridge Pattern)
  + separates playback logic from rendering, allowing switching between hardware and software modes.
* **Feature Enhancements** (Decorator Pattern)
  + lets users add optional features such as subtitles, equalizer, and watermark dynamically.
* **Playlist Management** (Composite Pattern)
  + supports nested playlists where each item can be a song or another playlist.
* **Remote Caching** (Proxy Pattern)
  + adds a caching mechanism to optimize remote streaming performance.

Each module is designed independently but works together through abstraction, making the system **scalable**, **maintainable**, and **easier** **to** **extend** than the legacy version.