# Chapter Three : System Specification and Design

# 3.1 Development Framework

The choice of framework was crucial in the creation of the video conferencing application. Flutter, an open-source UI toolkit by Google, was selected after thorough evaluation. Flutter's cross-platform ability, supporting Android, iOS, web, and desktop, from a single codebase was the prime attraction.

Several factors influenced this decision. Flutter's rich pre-built widgets facilitate swift UI development and customization. The "hot reload" feature accelerates iterative development, ensuring real-time code changes are reflected visually. Performance, enabled by the Skia rendering engine, is vital for real-time video and audio processing.

Flutter adopts a widget-based architecture, aiding modular design and separation of concerns. Its event loop guarantees a responsive user experience during complex operations. The plugin system provides access to platform-specific APIs, enhancing integration with native features.

Utilizing Flutter allows unified deployment across platforms, reducing development time while maintaining consistent user experiences. In summary, Flutter's versatility, performance, and extensive widget library lay a robust foundation for the application. Its architecture, promoting efficiency and integration, aligns with project goals. Leveraging Flutter's capabilities, the aim is to deliver a high-quality video conferencing application meeting user expectations (Johnson, 2022).

# 3.2 Technology Stack

Our video conferencing application's technology stack is a well-chosen blend of programming languages, frameworks, and libraries, providing a robust and efficient solution. Flutter, an open-source UI software development kit by Google, is at the core, enabling cross-platform development for iOS and Android. Dart, a Google-developed language, is used with Flutter for its performance and simplicity.

Firebase is integrated for cloud-based services, enabling real-time database synchronization and secure user authentication. Zego Cloud SDK empowers our app with video conferencing capabilities, including real-time transmission, screen sharing, and interactive whiteboards.