## Functional requirements

Conversation: The system should support one-on-one and group conversations between users.

Acknowledgment: The system should support message delivery acknowledgment, such as sent, delivered, and read.

Sharing: The system should support sharing of media files, such as images, videos, and audio.

Chat storage: The system must support the persistent storage of chat messages when a user is offline until the successful delivery of messages.

Push notifications: The system should be able to notify offline users of new messages once their status becomes online.

## Non-functional requirements:

Low latency: Users should be able to receive messages with low latency.

Consistency: Messages should be delivered in the order they were sent. Moreover, users must see the same chat history on all of their devices.

Availability: The system should be highly available. However, the availability can be compromised in the interest of consistency.

Security: The system must be secure via end-to-end encryption. The end-to-end encryption ensures that only the two communicating parties can see the content of messages. Nobody in between, not even WhatsApp, should have access.

## For Resources Estimation:

Maximum size of the media file: 10MB

Number of users: 100 million (80% active 20% inactive)

Number of messages sent in day: 10 billion

**API:**

sendMessage(sender_ID, reciever_ID, type, text=none, media_object=none, document=none)

getMessage(user_Id)

uploadFile(file_type, file)

downloadFile(user_id, file, file_id)