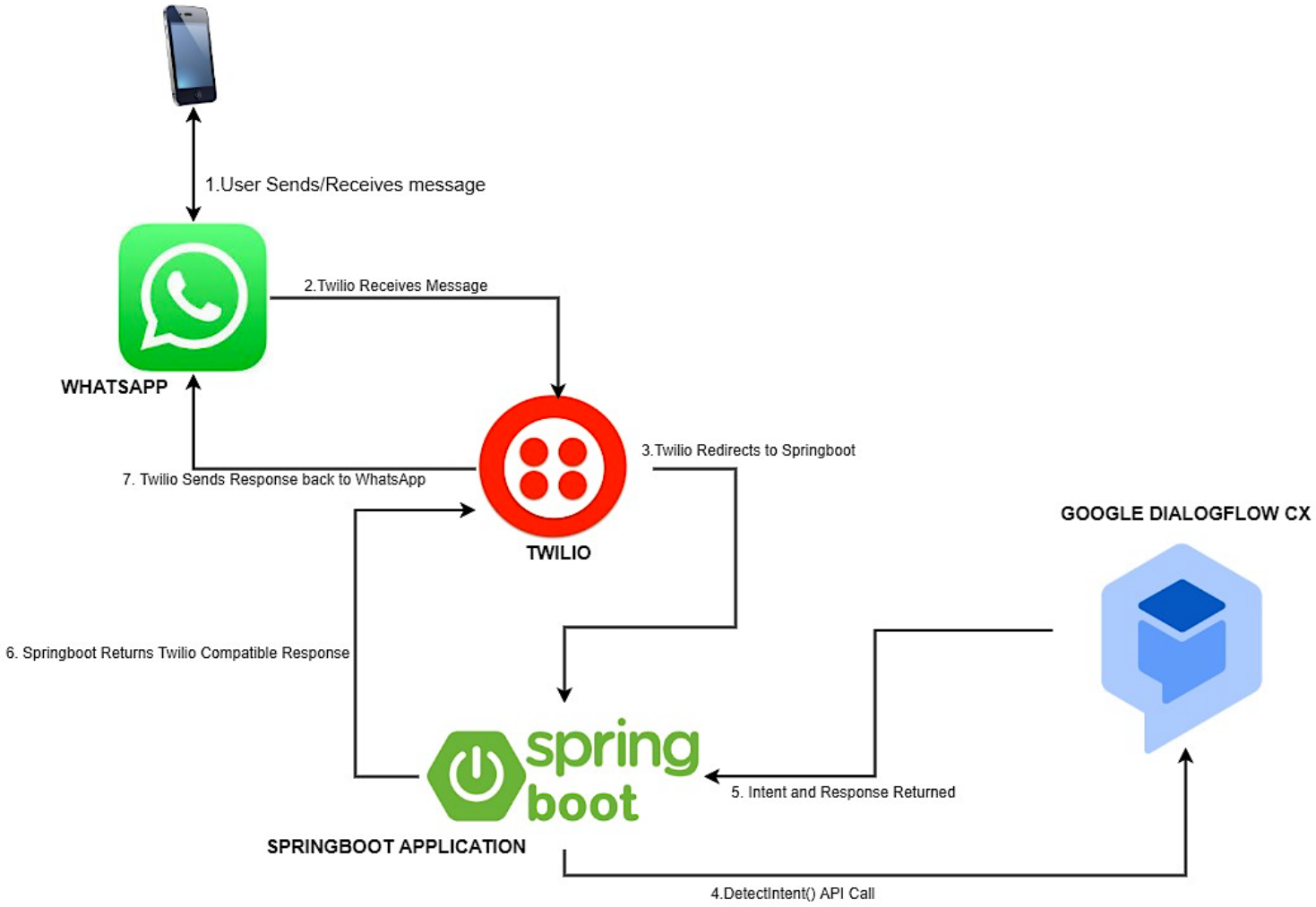
CovMate WhatsApp Bot

Introduction

CovMate is a WhatsApp based bot which can used by anyone who is looking to get help with Covid related information like FAQs, downloading their vaccination certificate, etc. CovMate can communicate in English and Hindi language.

Architecture Diagram

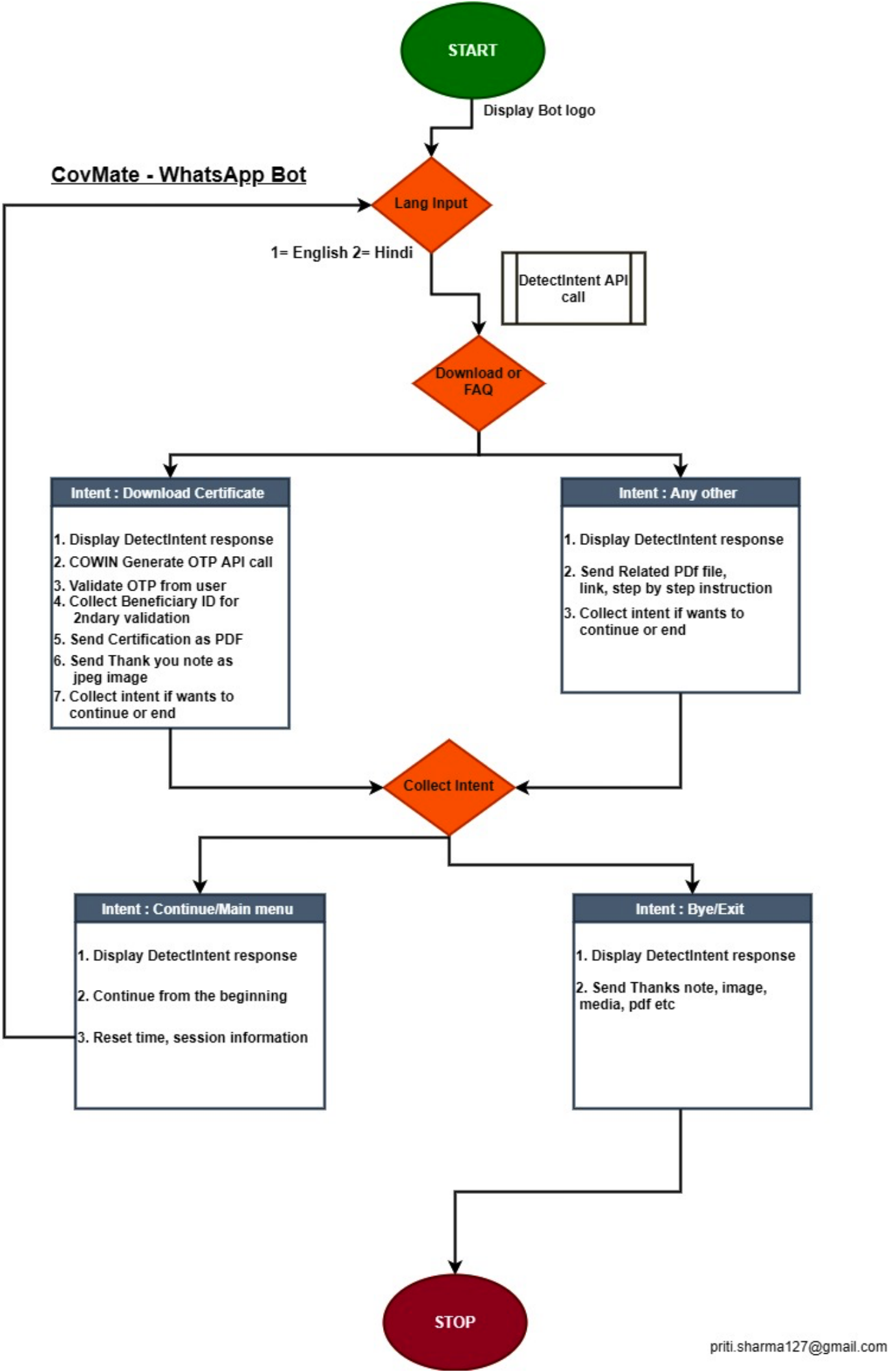
Here's a simple architecture dialer depicting the component involved in CovMate WhatsApp Bot. The explanation follows the diagram below:



WhatsApp is the client interface which allows user to communicate with underlying components. User send a message to Twilio phone number to which a web hook URL is mapped. This URL is of a Springboot application which intern integrates with Google Dialogflow CX (DFCX) through CX SDK APIs. Springboot also integrates with CoWin public APIs which are used for generating OTP, validating OTP and downloading vaccine certificate. When the response is sent back from DFCX, Springboot application converts it into a response which can be undressed and handled by Twilio platform using Twilio SDK. This response is sent back to WhatsApp which then renders it to the user in form of WhatsApp message.

Flow Diagram

The diagram below shows flow of typical conversation in CovMate WhatsApp bot:



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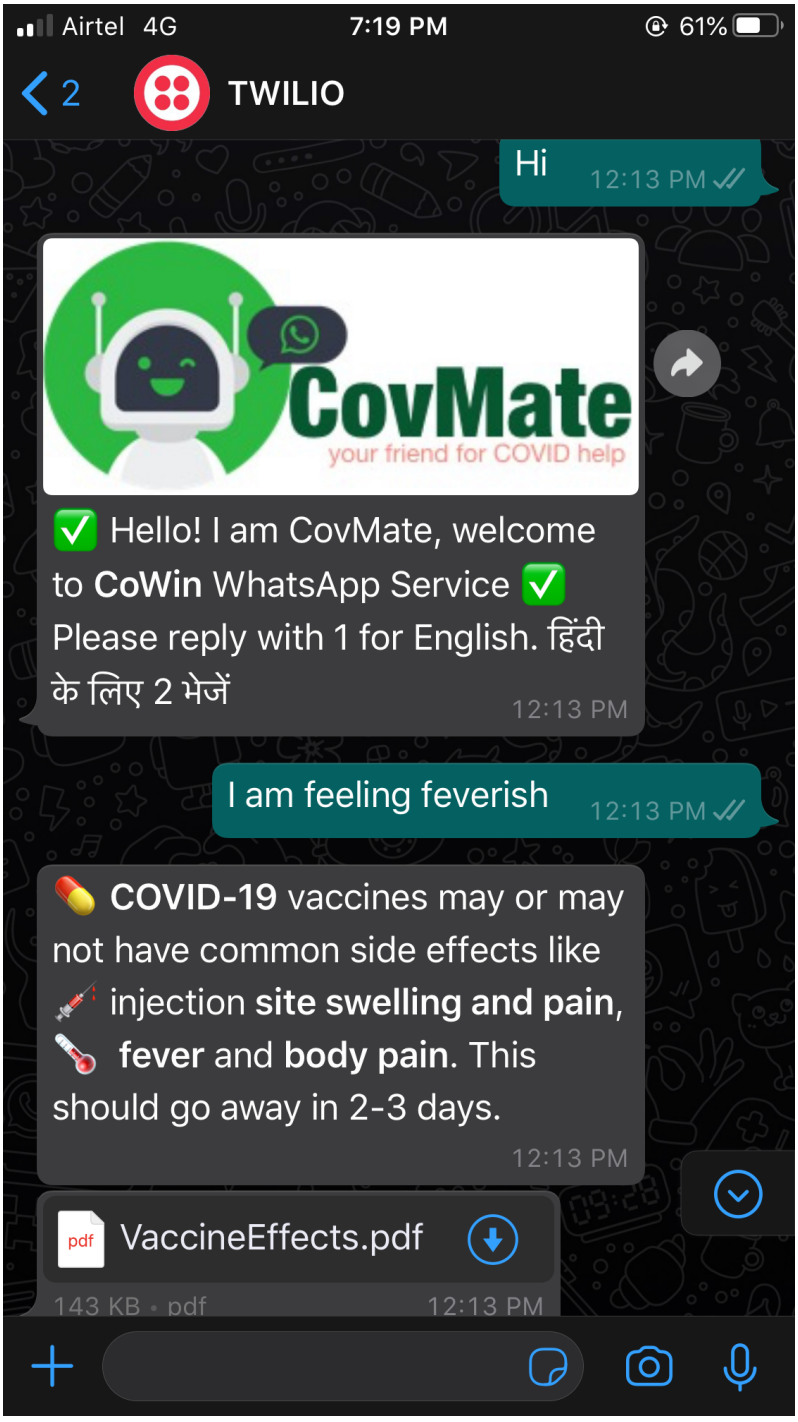
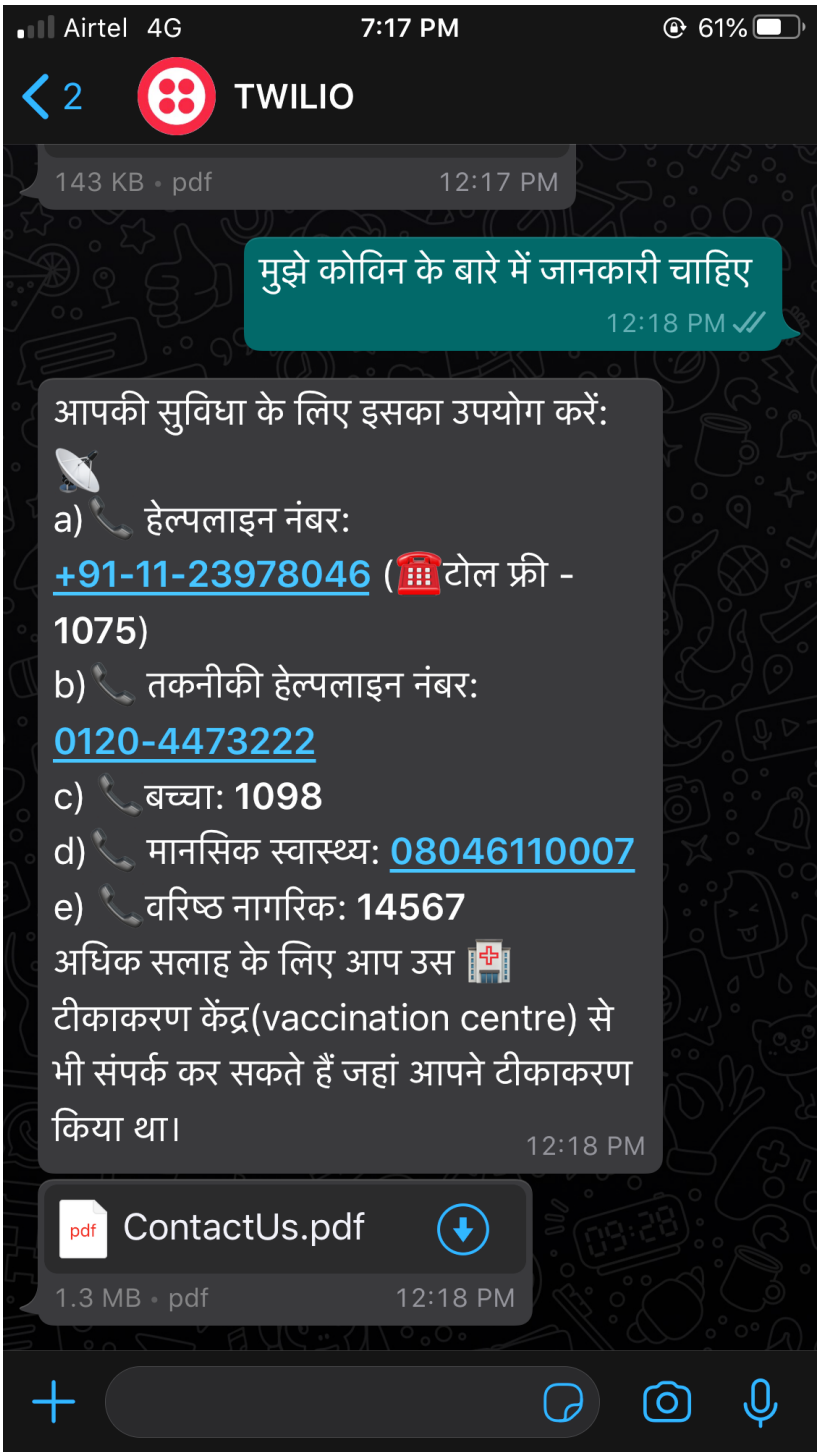
Sample Conversation:

Here are some images showing the natural conversation with CovMate:

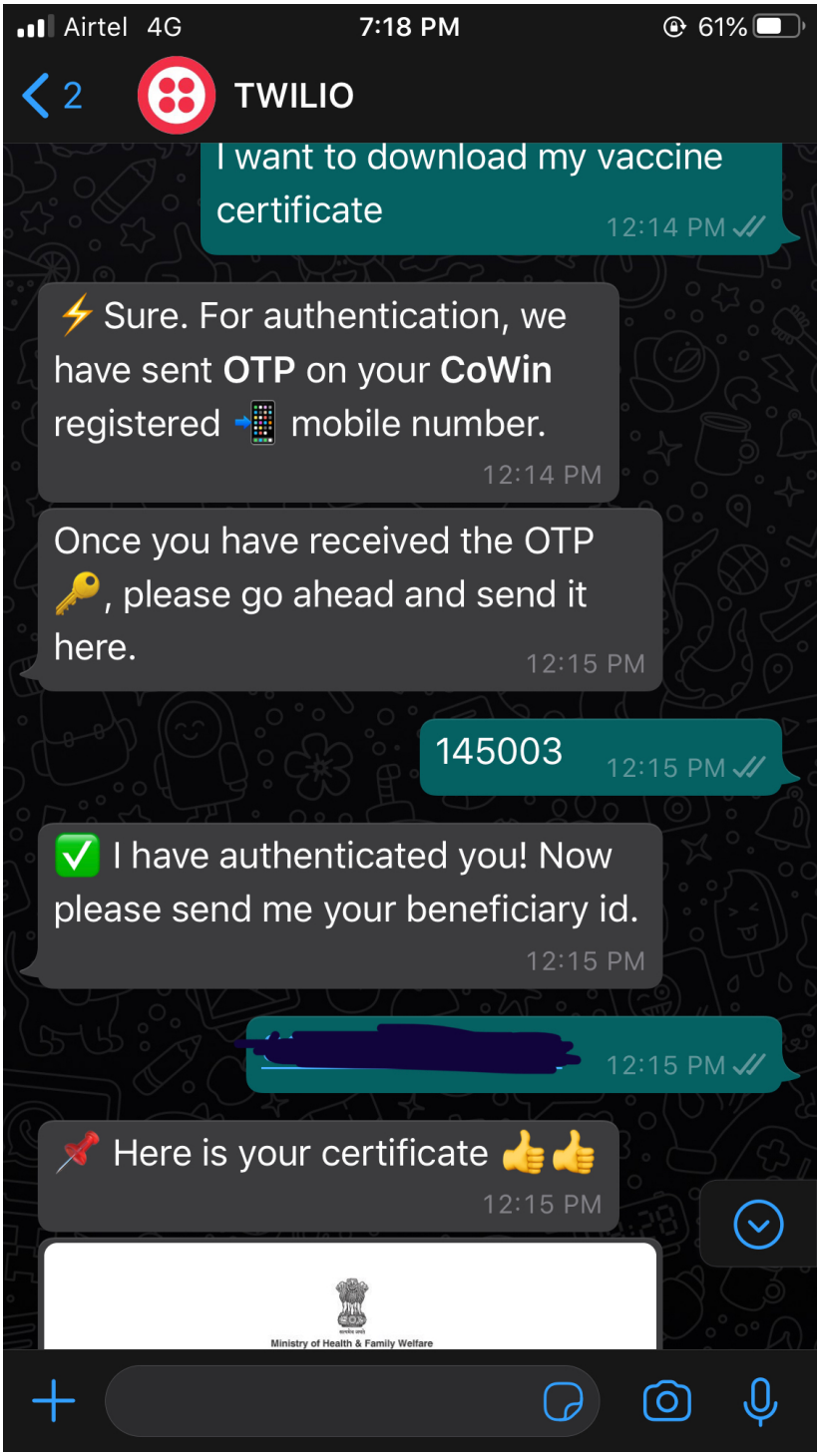
1) Welcome message - conversation starter



2) Vaccine side-effects intent in Hindi language



3) Download certificate intent



Technical Specifications

Technologies used:
1) Google Dialogflow CX (with SDK)
2) Twilio Platform and SDK
3) CoWin public APIs
4) Springboot
5) JDK 1.8

Future Enhancements

For demo purpose, I have used CoWin public APIs which provided limited functionality in terms of user verification and exposure of other user information. CovMate's Springboot backend can be enhanced to connect to CoWin's protected APIs which are more advanced and provide wide range APIs which make retrieval of user information easier. E.g., if protected APIs are used, then we do not have to ask user to enter 14-digit beneficiary id, as there are APIs available there. Access to protected APIs is provided to businesses and thus can be used when this code needs to be productionized.

This version of CovMate supports download certificate and many other intents related to frequently asked questions. User can add any intents they want in Google Dialogflow and with minor modifications in Springboot application CovMate can support any functionality desired.

Same goes with the language support. Google Dialogflow bot can be modified to support any of the listed languages. This includes adding intent, training phrases and fulfillment phrases. After that, all we need to do is to send the relevant language code while calling Google DFCX SDK method and bot will be able to communicate in that language.
Possibilities are unlimited with integration with Google Dialogflow CX!