Chatbots on Messaging Platform Revolution in app world

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Abstract - In the era of heavy mobile and desktop based apps Chatbots are the premier option which is very fast and lightweight. Chatbots can work against our regular apps that too on our most used messaging application. Chatbots can be created on most popular platforms (like messenger, telegram, slack, twitter, Skype). Some of the Chatbots building platforms allow us to create it in a jiffy.

Keywords *– Chatbots, Messaging Platform.*

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I. INTRODUCTION

In the second half of 2010's decade an interesting concept came into the focus of messaging technology or which will make user to stick with messaging window for work for fun and for many more reasons.

It is titled as Bots(Chatbots) which can be programed to perform user tasks in the same way as apps do. And also it can communicate in such a way as your friend chats with you. It follows its own flow of lifecycle[3] in spiral model which consists of some steps like to analyze,requirement, specification, script, development, testing, publish, monitor and customer review.

Some of the supreme/foremost/major/leading messaging platforms[2] like Facebook Messenger, Slack, Telegram, Twitter, Skype, Line, Hipchat, Kik, Cisco Spark, VK, Hangout, Viber and Kakao.

Anyone can create chatbots using bot building platform. Some of them are dev.microsoft.com, pandorabots.com, meya.ai, kore.com, gupshup.io, and developer.facebook.com which is further adopted by flowxo.com and chatfuel.com

In addition, we can make bot conversation as a human conversation or trained as digital assistant for that interesting NLP (Natural Language Processor) client can be adopted like Watson api, wit.ai, api.ai, luis.ai, Textrazor, alchemyapi.com, meaningcloud.com and aylien.com

II. WHAT IS CHATBOTS

Chatbots an automated computer program which reply to user as it understands input.[1] Such chatbots are drawn to give a feel of simulation of talking with real world people. It converses with the user in either text reply or audio reply. Typically, it is used in dialog systems for a lot of different practical purposes which may include customer service or information gathering. Some chatbots are superior in business. They use Natural Language Processing to understand user query other just work on keyword based input or fine particular keyword in a sentence and then reply to user.

III. CHATBOT LIFECYCLE

The Bot Lifecycle is based on Spiral model. It has a very high emphasis on risk analysis. It allows for incremental releases of the Chatbots, or incremental refinement through each iteration around the *spiral*.

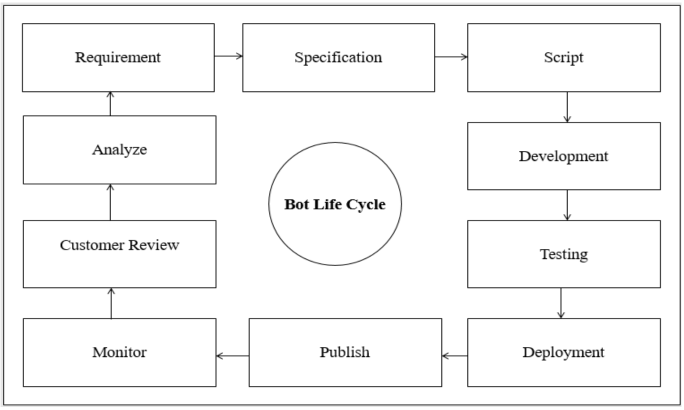

Fig. Chatbot Lifecycle

1. **Requirement** - The main focus of this phase is to determine the requirements like; Who is going to use the Bot? How will they use the Bot? What data should be passed as an input to the Bot? What data should the user expect by the Bot?
2. **Specification** - In this phase all expectation about bot is conveyed to product team. On which specification product team work on script of Bot.
3. **Script** – Script refer to the default behavior of the Bot. It defines the happy flow. Script can be of two type one is restricted flow and other is free flow. Restricted flow of Bots is provided by client and in case of free flow user is allowed to input anything. For free flow we need to integrate NLP in Bot program.
4. **Development** – A team of programmers are assigned by the company to work on the Bots. One of the most advantage for programmers is that they can develop Bot program in any language they prefer.
5. **Testing** – When Bot is ready, it is pushed to next stage for testing and Quality assurance. Testing is broadly divided in two types first is the Manual testing in which tester test Bot for various test cases manually. The second type of testing is Automation testing in which Bot tested for reliability, scalability and robustness. Bots is tested on different platform.
6. **Publish** – As we know the biggest advantage of Chatbots is it can be accessed from any messaging platform like Facebook Messenger, Slack, Telegram, Twitter, etc.

7. **Monitor** – Messaging platforms are very sensitive about spam. We must monitor and make sure that Bots developed by us are spam free.
8. **Customer Review** - Demo version of Bot is given to the customer, and if any changes are required then it is returned to developer for integration.
9. **Analyze** – As Bot is published on different channels. We can analyze the total no of users uses Bot. And how frequently it used.

IV. BOTS ON DIFFERENT MESSAGING PLATFORMS

The Biggest advantage of Chatbots is that it can be accessed from multiple messaging platforms.

A. **Facebook** – Recently facebook announced that it is opening up its Messenger platform in beta to let chatbots into the app. To Use Bot on Facebook Messenger we need facebook app and facebook page for unique identity. We use facebook page name as Bot name to converse later. Facebook provides some unique structured messages in Bot building like poll, survey and catalog.

B. **Slack** – Slackbot is simply built in robot on slack. To use slack bot user needs to do profile completion and integration setup. '/' slash commands are very popular in slackbot conversation. Slack follows organization chat concept or org (team) chat concept so for add bot in our org we need to use 'Add to Slack' Button to activate it.

C. **Telegram** – Bots on telegram are simply telegram accounts operated by software. In order to use telegram bot, we need to authorize it via 'Botfather' bot account of telegram same as facebook; telegram also supports structured messages like button for reply. Also the '/' slash commands are special keys in Telegram bot conversation.

D. **Twitter** – While using Bot on Twitter we need one Twitter account to act as Bot. and also its twitter handle which starts with @ keyword. We need consumerkey, consumerSecret, accessToken, accessTokenSecret in order to configure Bot. In twitter we follow direct message concept to chat with bot.

E. **Skype** – Bots on skype are a normal skype user account. In order to use Skype bot 1. Click the 'Add bots icon' 2. Scroll through the list of available bot 3. Then select one then do 'Add to Contacts'.

F. **Other Channels** – We can publish Bots in more Channels like Line, Kik, Hipchat, Cisco Spark, VK, Hangouts, Kakao, Viber.

V. BOT BUILDING PLATFORM

Today a lot of organizations allows us to develop Bots on their bot building platform

➢ **Gupshup's Bot Building Platform –**Gupshup.io has a tool called the Bot Builder that helps you create a bot in seconds. The Bot Builder includes a simple code editor, a publishing mechanism and a diagnostics program amongst other features, that significantly simplifies the process of building a Chatbot.

Usually, the process to build a bot would include setting up a dev. environment, installing libraries and packages, and setting up your own server space, among other things. Gupshup has taken care of all these time-consuming processes to allow you to focus on the bot logic. There are a few features of the Bot Builder that enables this. First is the pre-installed libraries such as a JavaScript async library that is pre-installed in the code. Upon creation of a new bot you will also see some template code for common processes.

The Bot Builder also provides single-click secure server deployment for your chat bot eliminating the need for your own server. Deployment enables you to test out your Chatbot using the Gupshup Proxy Bot.

The Bot Builder also gives advanced/power users more control for custom hosting of their bot. Use the 'Callback URL' option to specify the endpoint at which your bot logic resides.

Methods provided by the Bot Builder

There are five methods given to a user and they are all required functions. We'll briefly discuss what each method does.

- **MessageHandler**() : This is the method that executes when your bot is communicated with. It has two parameters: 'context' and 'event'. You can parse what message was sent to your bot using 'event.message'. Your bot can then reply using the context.sendResponse property.
- **EventHandler()**:This function is invoked when an event associated with a bot is triggered. Examples of events that are triggered are: someone joining a Facebook group or someone invoking a Proxy Bot. When you type in 'proxy {botName}' to map your bot to the Proxy Bot, the EventHandler function is invoked.
- **httpResponseHandler()** : You can use http GET and POST requests in your chat bot. The responses to any such http call will be handled by the httpResponseHandler function.
- **DbGetHandler()** : A method for database persistence. Use this method to query your database for any records.
- **DbPutHandler()** : A method for database persistence. Use this method to insert records into your database.

➢ **Facebook Bot Building Platform** - The Messenger Platform provides us with tools to build a bot. For Bot integration we need following.

- **Facebook App:**The Facebook App contains the settings. This is where you will setup your webhook, retrieve your page access token and submit your app for approval.
- **Facebook Page:**A Facebook Page will be used as the identity of your bot. When people chat with your bot, they will see the Page name and the Page profile pic.
- **Webhook URL:** Facebook use secure callbacks in order to send you messaging events. These will be sent to your webhook. Webhooks are used to send us a variety of different events including messages, authentication events and callback events from messages.
- **Get a Page Access Token:** A Page Access Token is based on an app, page and user and has scopes associated with it. In the developer app, go to the

Messenger tab. Select your page and generate a token.

- **Subscribe the App to a Page:**In order for your webhook to receive events for a specific page, you must subscribe your app to the page. You can do this in the Webhooks section under the Messenger Tab.
- **Receive a Message:**In order to receive messages from a Chatbot, we must have subscribed to the messages field when you setup our webhook. The callbacks for receiving messages will be sent to your webhook. Messages may have an image, video or audio attachment.
- **Send a Message:**The Messenger Platform supports sending several different types of messages. We can send text or images. We've also created Structured Messages which have several templates.
- **Structured Messages:**Structured Messages support multiple templates to enable different kinds of use cases. The Button and Generic Template can render buttons that open a URL or make a back-end call to our webhook. The Receipt Template can be used to send a receipt.
- Apart from these there are other two more bot builder available specifically for Facebook Messenger Bot i.e. Flowxo andChatfuel. If user don't have any programming sort of knowledge, then he can build bot on Chatfuel's Platform.

VI. HUMAN TOUCH TO BOT PROGRAM

When we think about a smart Chatbot at that time end user expects that Bot will be going to recognize my each and every request and then reply accordingly. To achieve this kind of functionality programmer should integrate Natural Language Processing mechanism in Bot Program. By doing this Bot flow will become free flow not the restricted one.

Some of the third parties NLP apis are available in market to use it with bot are listed below :

I. **api.ai**–Single ReSTapi call and it done**; api.ai** provides user a handful of information in one api call and in return it gives JSON which contains extracted entities like action, place, time, units etc. We don't need to train api.ai account and its service also have functionality of voice recognition and text to speech.

II. **wit.ai**– Facebook wants AI which can creates its own AI. For that reason, along with messenger bot facebook launched wit.ai which has NLP mechanism along with machine learning and also we can train it on our own demand.

III. **Watson api** – IBM Watsonis a technology platform that uses natural language processing and machine learning to reveal insights from large amounts of unstructured data. And it is recently opened up their apis for outside developer.

IV. **Textrazor** – It also provides us good extracted entity and its biggest advantage that it provides a huge knowledgebase of entity details extracted from various web sources, including Wikipedia, DBPedia and Wikidata. But we can't train it.

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