INTEGRATION OF CHATBOT (iBOT-23)

EASTERN BANK LIMITED

Prepared By
Brain Station 23

Version History

SN#	Author	Date	Remark
1	Abu Tareq Md. Moinul Islam and Md. Moshiur Mahamud Piash	7th March, 2019	Initial Draft
2	Md. Moshiur Mahamud Piash	13th March, 2019	Include Financial

Acronyms

Acronym	Explanation
EBL	Eastern Bank Limited
BS23	Brain Station 23
iBot-23	BS23's Implemented Chatbot Name

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Integration of Chatbot (iBot-23)

1. Introduction

In this section of the document, we identify the scope of the **Chatbot (iBot-23)** by defining its core components, functionality overview and acceptance criterion.

A chatbot (also known as a Smartbot, Talkbot, Chatterbot, Bot, IM Bot, interactive agent, conversational interface or artificial conversational entity) is a computer program or an artificial intelligence which conducts a conversation via auditory or textual methods. Chatbots can range from simple to highly intelligent depending on how they are programmed. A rules-based chatbot can only handle very specific commands, while a chatbot that uses machine learning will get smarter with each interaction. The major banks are utilizing chatbots on apps like Facebook Messenger to provide customer service through conversational banking.

2. How can Chatbots be Used in Banking?

Messaging apps such as 'Facebook Messenger' and 'WhatsApp' are now the preferred method of interaction on mobile devices. There are more than 100,000 bots on 'Facebook Messenger' and just as many offered on 'WeChat' across various industries. The banking industry is changing the customer experience by utilizing these platforms and chatbots.

Bank of America's chatbot *Erica* can take commands via type and voice command and perform functions such as scheduling a payment and exploring recent transactions within their app. *Erica* is expected to have predictive skills as well in order to lead customers to better financial health. Capital One has a similar text-based chatbot that allows customers to manager their money via text message, including actions like viewing payment history and pay a credit card bill. Mastercard utilizes a bot on 'Facebook Messenger', which does many of the above-mentioned functions, but also provides updates on cardholder benefits and notifies users about offers.

3. Opportunities and Other Aspects of Chatbot

Chatbots have existed for decades, but businesses have only recently begun to exploit the opportunities they provide.

You can find chatbots in messaging apps on smartphones for personal use or on company websites for business use. A well-optimized chatbot can be a great addition to an internet banking solution because it can help to boost your conversion rates. In addition, the new technology also attracts a certain range of customer towards the product.

The real credit for bringing chatbots further into the spotlight goes to Facebook Messenger, due to the fact that Facebook made it possible to integrate chatbots into the platform. In 2016, messaging apps had already surpassed social media and the four biggest messaging apps had reached about 4 billion users (a huge potential for businesses).

Messaging Apps Have Surpassed Social Networks

Global monthly active users for the top 4 messaging apps and social networks, In millions
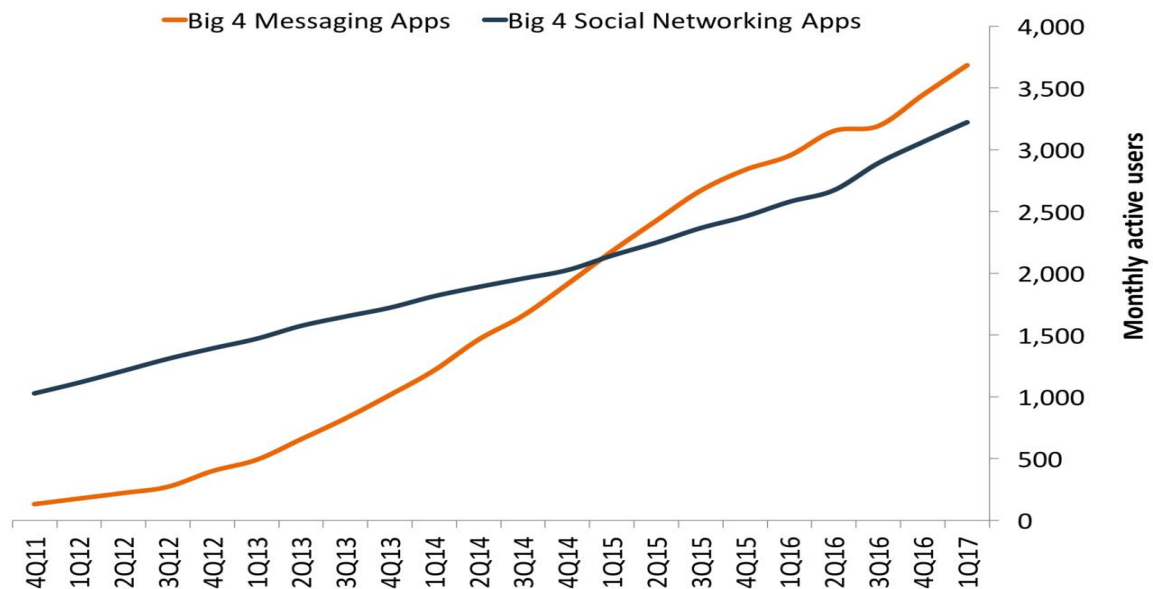
Note: Big 4 messaging apps are WhatsApp, Messenger, WeChat, Viber.
Big 4 social networks are Facebook, Instagram, Twitter, LinkedIn
Source: Companies, Apptopia, TechCrunch, BI Intelligence estimates, 2017

Facebook Messenger has 1.3 billion monthly active users and it is one of the most popular channels for communication, including reaching out to customers.

Number of monthly active Facebook Messenger users from April 2014 to September 2017 (in millions)
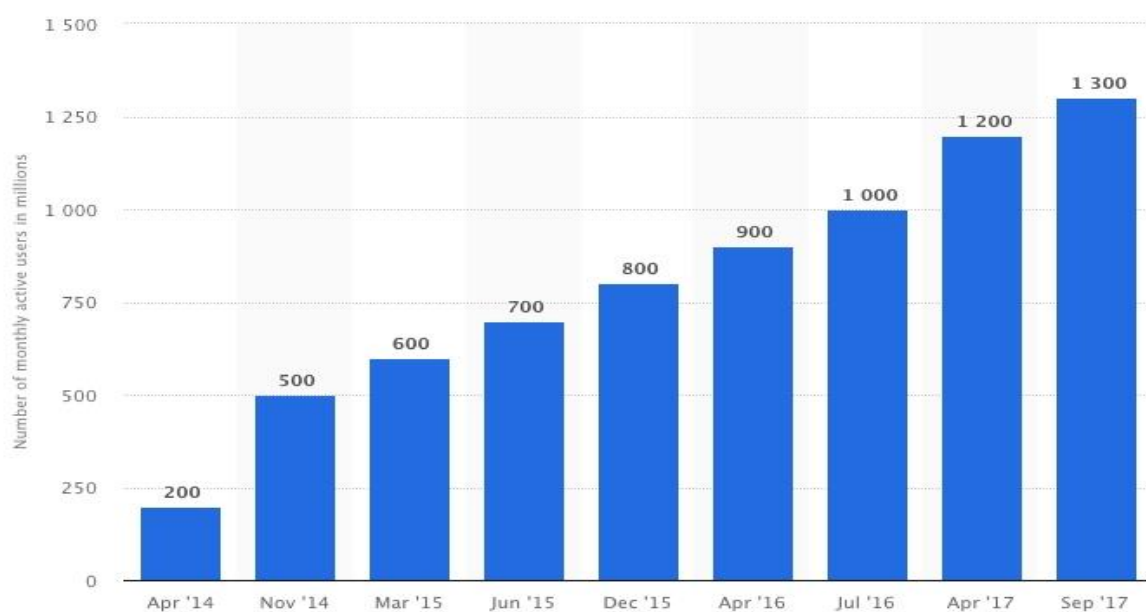
This large active user count got companies busy building bots. More precisely, there are 100,000 active bots on the Messenger platform. According to Venture Beat, "That's up 233 percent from the 30,000 bots on Messenger six months after the feature launch in April of 2016."

4. Benefits of Using a Chatbot in Your Business

- **Chatbots have potential.** Even though they are increasingly used, the modern chatbot is still a young technology. With the continuing development of AI, the potential for bots in business and personal lives is unlimited.
- **They can be easy to build.** It depends on what you want to achieve, of course, but you can design a simple chatbot based on the Facebook Messenger without any programming experience.
- **Chatbots emphasize the company's brand and image.** The chatbot represents the company when it's communicating with the customer, so, from a marketing point of view, it is a perfect embodiment of brand building.
- **They offer straightforward services.** A well-optimized chatbot communicates only the essentials and does not overwhelm the user.
- **Chatbots automate processes.** Bots are able to take on human work for, generally speaking, mundane or basic analytic tasks.

5. Services of Chatbot

By artificial intelligence, the Chatbot (iBot-23) conducts a conversation via Voice or Textual or both methods.

5.1. Architecture Diagram

ChatBot Services -

1. Dialogflow - Google
2. Watson - IBM
3. Azure Bot - Microsoft
4. Amazon Lex - Amazon
5. Oracle Intelligent Bot - Oracle
   ....and etc.

High Level Architectural Diagram For iBot-23

5.2. Customer Authentication Process
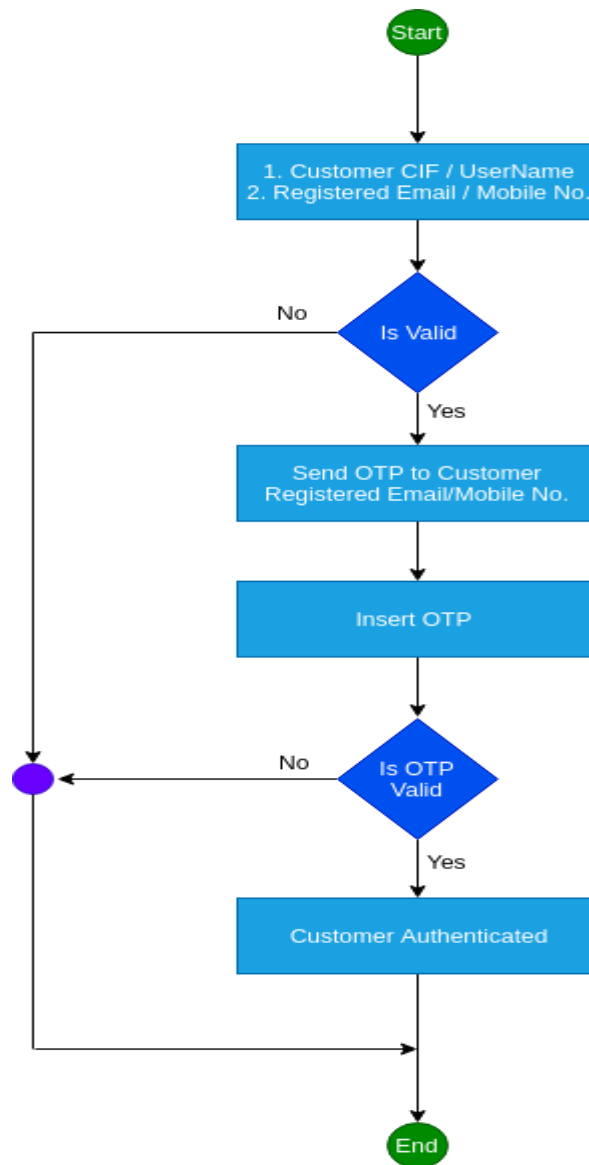
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    No              /  Is OTP  \
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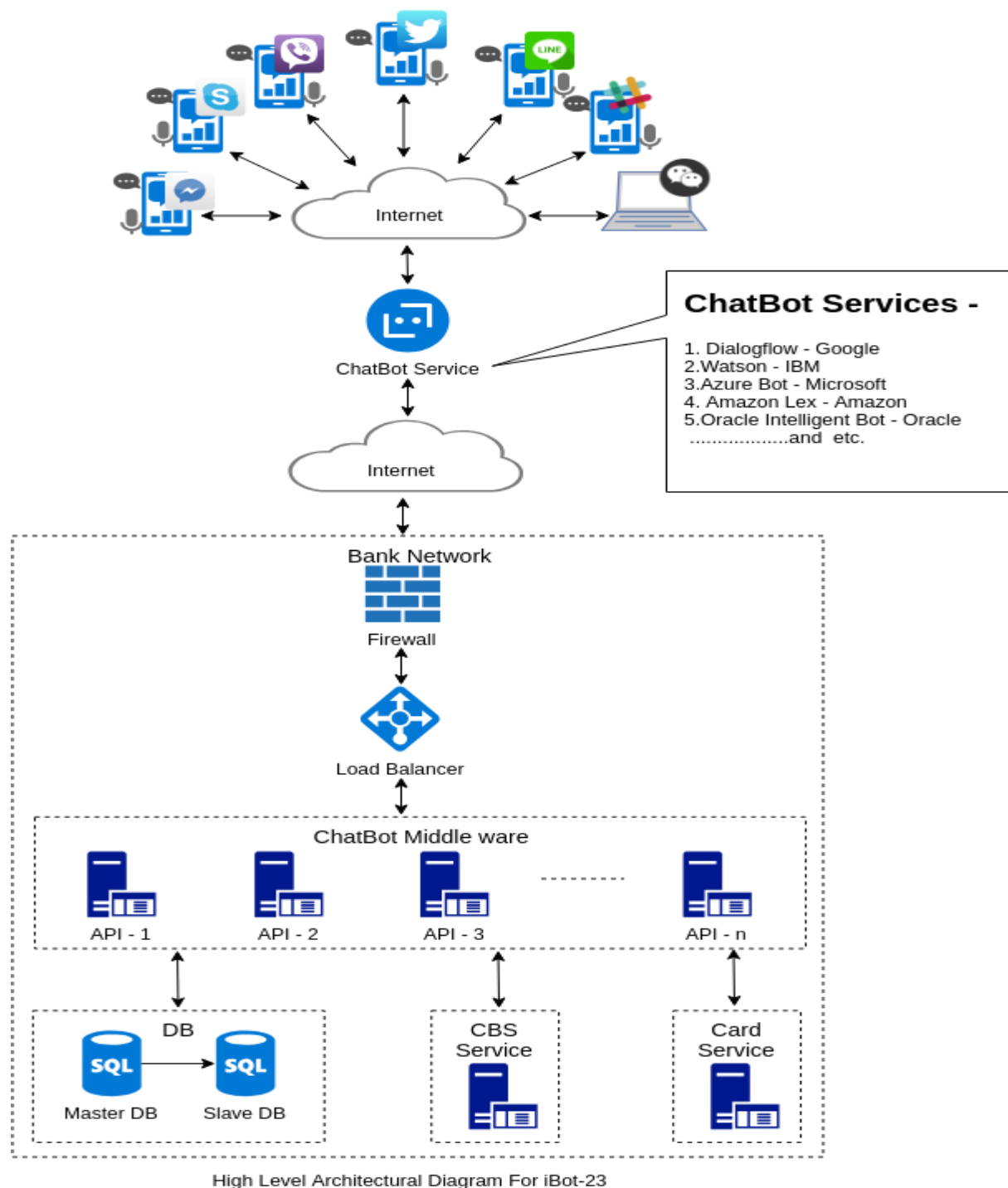
5.3. Customer Authentication Process

We put apart the Chatbot features into a couple of phases. In first phase of this Chatbot (iBot-23), we will cover some Accounts/Cards related information and in second phase, we will include other features into the Chatbot.

5.3.1. Chatbot (iBot-23) First Phase Features

In first phase of this Chatbot, we will cover all the Accounts/Cards related inquires by 'Text to Text' communication. Apart from the accounts and cards inquiries, the Chatbot will provide few general banking information (FAQ) with the users. In addition, the users could make 'Mobile Recharge' from this Chatbot. Upon bank's demand, we could incorporate the related features in Admin Panel to maintain the FAQ and Customer type wise configuration. As the admin panel is vital for Chatbot, so we will incorporate the Admin Panel of the Chatbot in Phase 1.

SL#	Phase 1 Features Name	Feature Price
1	CASA Balance	100,000.00
2	CASA Mini Statement (Last 5 Transactions)	
3	Credit Card Limit (both BDT & USD)	200,000.00
4	Credit Card Outstanding (both BDT & USD)	
5	Credit Card Available Balance (both BDT & USD)	
6	Credit Card Mini Statement (Last 5 Transactions)	
7	Prepaid Card Available Balance (both BDT & USD)	100,000.00
8	Prepaid Card Mini Statement (Last 5 Transactions)	
9	Mobile Recharge using EBL Account	300,000.00
10	Mobile Recharge using Credit Card	
11	Mobile Recharge using Prepaid Card.	
12	General Service Information & FAQ	150,000.00
Total		**850,000.00**

Note: Price may vary based on the requirements

In second phase of this Chatbot, we will cover few accounts related inquires, service requests and fund transfers within the same bank accounts etc. by **'Text to Text'** and **'Voice to Text'** communication. Upon bank's demand, we could incorporate the related features in Admin Panel to maintain the FAQ and Customer type wise configuration.

SL#	Phase 2 Features Name	Feature Price
1	Date-wise CASA Statement (Up to 10 Transactions)	30,000.00
2	TD/RD Current Outstanding Balance	50,000.00
3	Loan Account Current Outstanding Balance	80,000.00
4	Loan Repayment Schedule	
5	Credit Card Unbilled Statement	50,000.00
6	Wallet Account (tagged) Balance	80,000.00
7	Wallet Account (tagged) Mini Statement (Last 5 Transactions)	
8	CASA Cheque Book Request	100,000.00
9	CASA Cheque Book Request Status	
10	Credit Card Cheque Book Request	100,000.00
11	Credit Card Cheque Book Status Check	
12	CASA Cheque Leaf Stop Request	120,000.00
13	Credit Card Cheque Leaf Stop Request	
14	Debit Card Active Request	100,000.00
15	Credit Card Active Request	
16	Credit Card Block Request	
17	Loan Request	200,000.00
18	DPS Opening Request	
19	Fixed Deposit Request	
20	NOC Request	
21	Physical Statement Request	
22	Own Account Fund Transfer	200,000.00
23	Own Account Fund Transfer History (Last 10 Transactions)	
24	Within EBL Account Fund Transfer	
25	Within EBL Account Fund Transfer History (Last 10 Transactions)	
26	Mobile Recharge using Wallet Account (tagged)	100,000.00
	Total	**1,210,000.00**

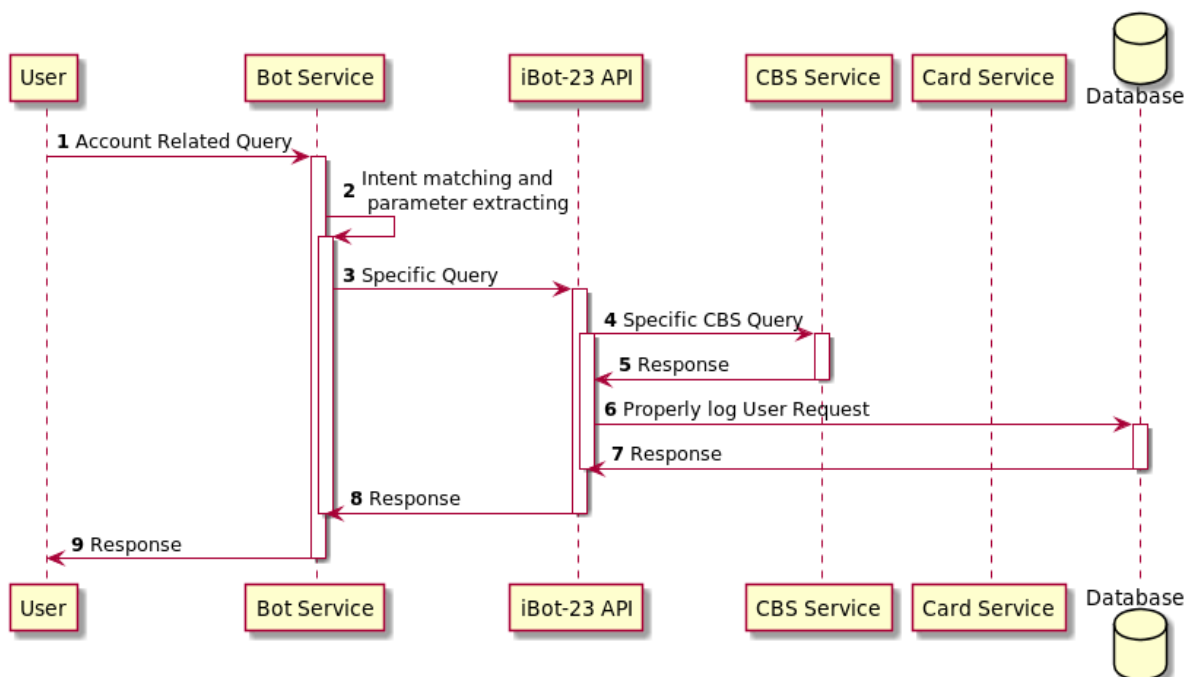*Note: Price may vary based on the requirements*

5.4. Sequence Diagram

To understand the multiple system integration of the Chatbot (iBot-23) properly, we are providing few 'Sequence Diagram' as example.
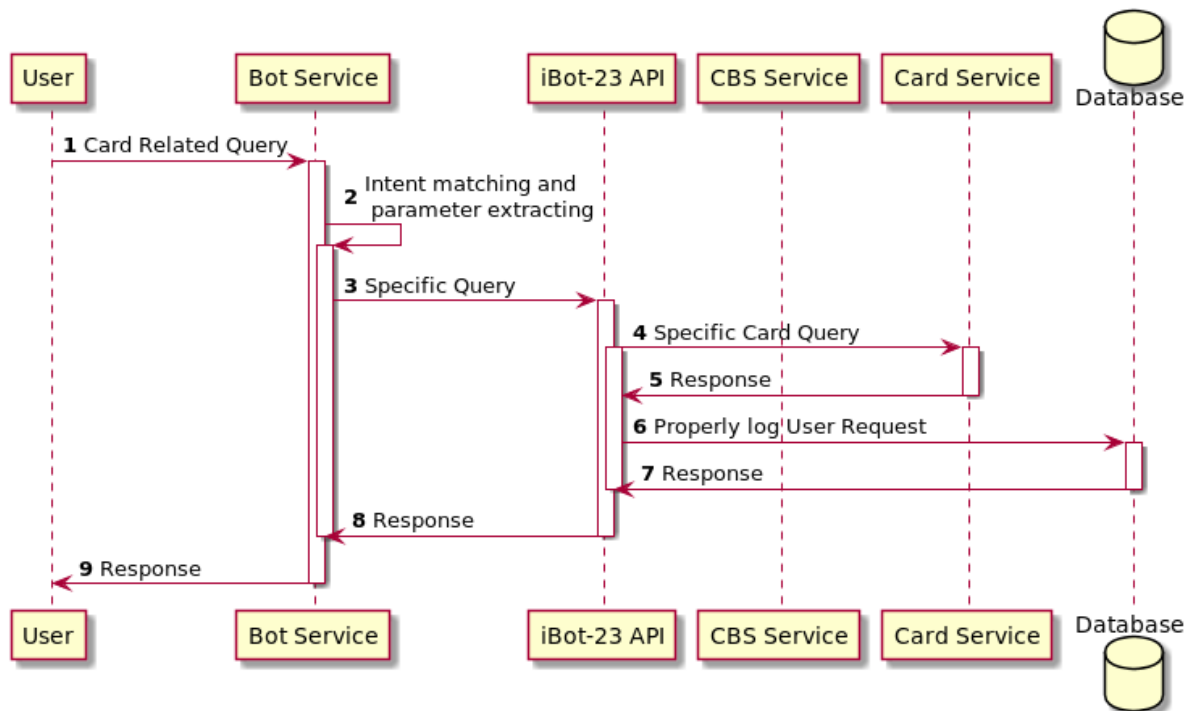
5.4.1.Sequence Diagram of FAQ (General Query)
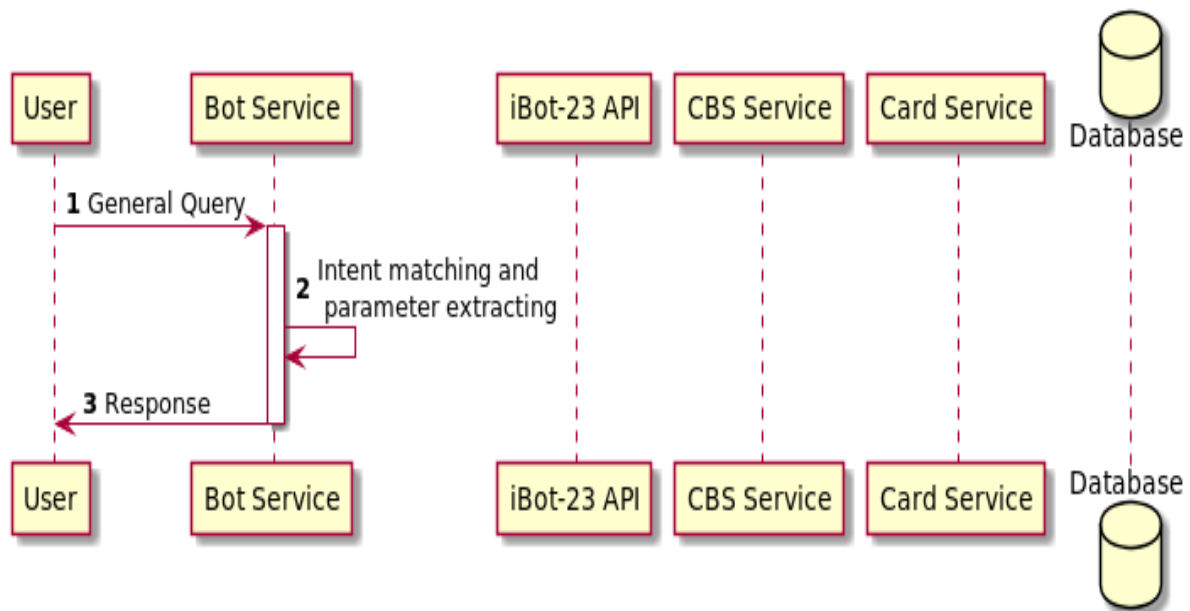
5.4.2.Sequence Diagram of CBS (Accounts Related Query)

5.4.3.Sequence Diagram of Card System (Credit Card Related Query)

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6. Chatbot Admin Panel

To give you full control of your Chatbot and ability to customize your bot as you wish, we offer Chatbot Admin panel development. This puts you in charge of your Chatbot. The admin panel is a unique tool which enables you to improve the Chatbot flow for better business outcomes. Creating an admin panel puts you in command of your Chatbot and gives you full flexibility and ability to customize the bot to your preferences. The Chatbot Admin platform has two main functions:

- provides an administrator with access to information (metrics, messaging history, orders history etc.)
- allows managing data (for example, adding products, categories, shop contacts).

There are some functions specific to admin panel of chatbots only such as operator (Live Chat) module, flow editor module, AI module etc.

Admin panel can exist as a separate website or desktop.

6.1. Chatbot Admin's Modules

SL#	Admin Module Name	Module Price
1	Required Chatbot Feature Management	150,000.00
2	Knowledge-base Management	100,000.00
3	Notifications Module	50,000.00
4	Customer Management Module	80,000.00
5	Messaging History Module	50,000.00
6	Roles Management Module	50,000.00
7	Reporting (Up to 5 Reports)	100,000.00
	Total	**580,000.00**

Note: Price may vary based on the requirements

7. Popular Bot Services Comparison

Social Media|Technology (Provider)	Dialogflow (Google)	Dialogflow (Microsoft)	Amazon Lex Bot (Amazon)	Intelligent Bot (Oracle)	Watson (IBM)
Facebook Messenger	Yes	Yes	Yes	Yes	Yes
Skype	Yes	Yes	No	No	Yes
Twitter	Yes	No	No	No	Yes
Viber	Yes	No	No	No	No
Line	Yes	No	No	No	No
Kik	Yes	Yes	Yes	No	No
Slack	Yes	Yes	Yes	No	Yes
Telegram	Yes	Yes	No	No	No
Cisco Spark	Yes	No	No	No	No
Cisco Tropo	Yes	No	No	No	No
Twilio	Yes	Yes	Yes	No	No
Twilio Programmable Chat	Yes	No	No	No	No
GroupMe	No	Yes	No	No	No
Microsoft Teams	No	Yes	No	No	No
Cortana	No	Yes	No	No	No
Skype for Business	No	Yes	No	No	No
Instagram	No	No	No	No	Yes
WeChat	No	No	No	No	Yes
Web Application	Yes	Yes	Yes	Yes	Yes

8. Prerequisite and Deliverables

8.1. Prerequisite of Chatbot

To implement this feature, we need the following items:

    i.   All the required content vetted by EBL
    ii.   All the required APIs
    iii.   All the FAQs
    iv.   Required Network Access

8.2. Define Scope

All the items of **Chatbot (iBot-23) Features List (2.2)** are in the scope of this Chatbot.

8.3. Out of Scope

Anything not explicitly stated in 'Define Scope' sections in this proposal are outside of the scope of this proposal. In addition, any back-office configurations for Chatbot users are out of scope whereas we could incorporate a 'Back Office Panel (Admin Panel)' based on your demand.

9. Acceptance Procedure

For acceptance of any deliverable, BS23 shall provide a copy thereof to you of the document supporting the event and demonstrate to you that the deliverable conforms to the description specified for such deliverable in the section on Deliverables above. You will be responsible for any additional review and testing of such deliverable in accordance with any mutually agreed test scripts as may be included in BS23's Project Management plan. If the deliverable does not conform with the description for such deliverable specified in the Section on Deliverables above, and/or any such test scripts, you shall have 10 (Ten) business days after BS23's submission of the deliverable ("acceptance period") to give BS23 a written notice which shall specify the deficiencies in detail. BS23 shall use reasonable efforts to promptly rectify any such deficiencies. After rectification BS23 shall resubmit the deliverable for your review and testing as set forth above. Upon accepting any deliverable provided by BS23, you shall provide BS23 with written acceptance of such deliverable. If you fail to provide any deficiencies within the acceptance period, as provided above, such deliverable shall be deemed to be accepted at the end of the acceptance period.

10. Investment Summary

10.1. Rates, Estimated Fees and Expenses

BS23 is pleased to offer a Fixed Price of **BDT 26,40,000.00 (Twenty-Six Lac Forty Thousand Taka Only)** for the scope of services and deliverables described in this proposal. This price is excluding the VAT amount and the VAT/TEX will be added as per the government policy which is 5% (as per current government policy) of the total amount.

SL#	Item Name	Amount in BDT
1	Chatbot Integration	2,640,000.00
	Total	**2,640,000.00**
	VAT (5%)	132,000.00
	Grand Total	**2,772,000.00**

Any additional change, which is not in scope, will be addressed through new Change Control Request (CCR) process.

10.2. Payment Terms

Upon completion of a milestone, the corresponding Fee for such milestone specified below becomes due and payable and BS23 shall thereafter invoice, and you shall pay such Fee within **fifteen (15)** days from the invoice date. A milestone is completed once all the deliverable(s) under such milestone are accepted, or deemed accepted, in accordance with Section 9. - Acceptance of Deliverables.

SL#	Milestone	%	Fee (BDT)
1	Upon your placement of Purchase order and Contract execution	30% of the Project	792,000.00
2	Upon your e-mail confirmation / UAT Sign-off of Delivery of Phase 1	25% of Phase 1	1,320,000.00
3	Upon Deployed the Delivery of Phase 1 Features in Live	25% of Phase 1	
4	Upon your e-mail confirmation / UAT Sign-off of Delivery of Phase 2	25% of Phase 2	
5	Upon Deployed the Delivery of Phase 2 Features in Live	25% of Phase 2	
6	Upon your e-mail confirmation of completion of the project or 4 weeks from the date of final delivery whichever is earlier	20% of the Project	528,000.00
	TOTAL	**100%**	**2,640,000.00**

Any additional change, which is not in scope, will be addressed through new Change Control Request (CCR) process.

10.3. Contract Jurisdiction

The contract between BS23 and UCBL will be subject to the laws and jurisdiction of courts in Bangladesh.

11. Next Steps

Go through the proposal and share your observations with us. To more details of our implementation services, meet with our team to discuss more in detail of your expectations and requirements for the feature.