

MICHIGAN STATE  

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UNIVERSITY

# Project Plan

## Asa: Amazon Shopping Assistant

### The Capstone Experience

Team Amazon

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*From Students...  
...to Professionals*

# Functional Specifications

- A chat bot to bring Amazon shopping to messaging platforms
- Users can search for and purchase items
- Learns about a user
  - Through conversations
  - Using Facebook profile
- Occasionally messages user with tailored recommendations
- Reminds users to buy gifts
- Helps user to choose gifts for others
- Extendable to various messaging platforms (Slack, FB, SMS)



# Design Specifications

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- Focus on integration with Facebook messenger
- Extend functionality to other platforms
- User interaction is two-fold:
  - Messaging application UI
  - Natural language conversation
- Enhance text conversation with pictures and quick replies when dealing with items



# Screen Mockup: Starting Screen, Small Talk

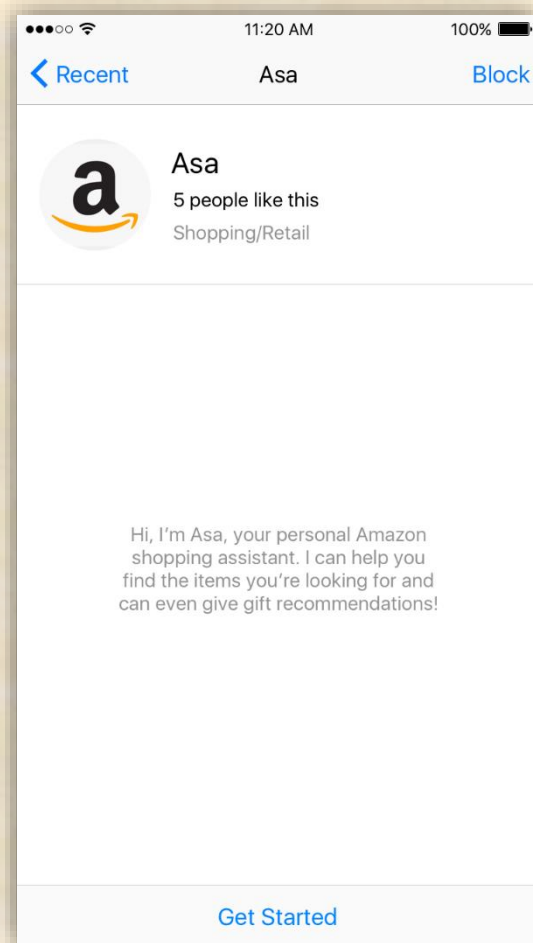


Figure 1: Starting Screen

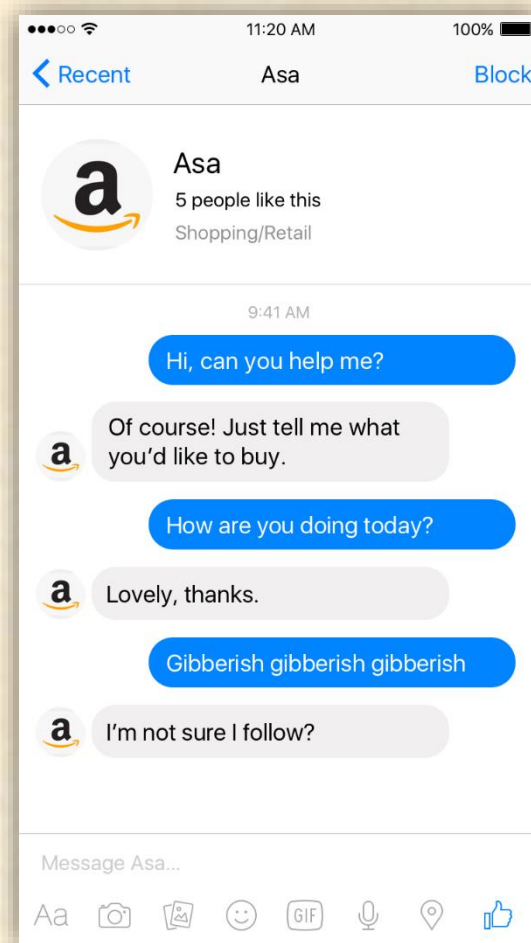
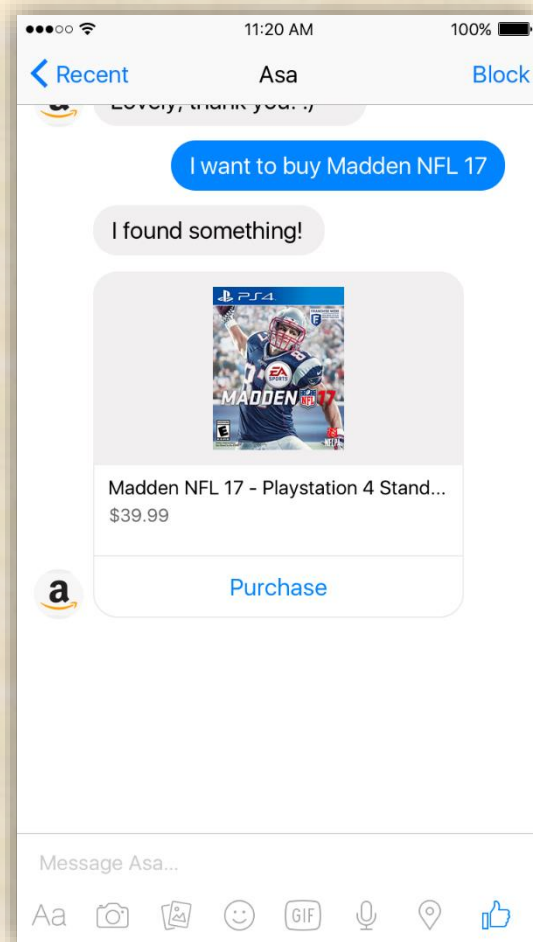


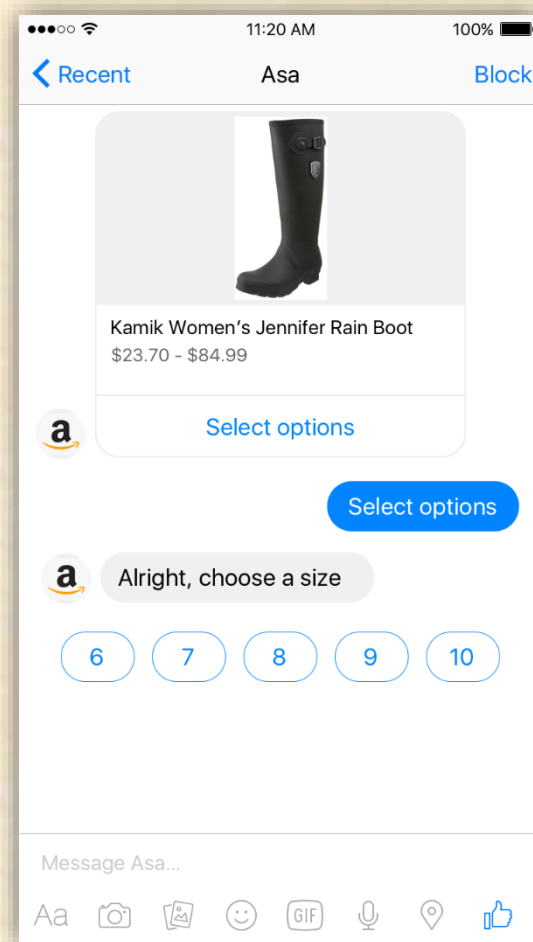
Figure 2: Small talk



# Screen Mockup: Searching for Items



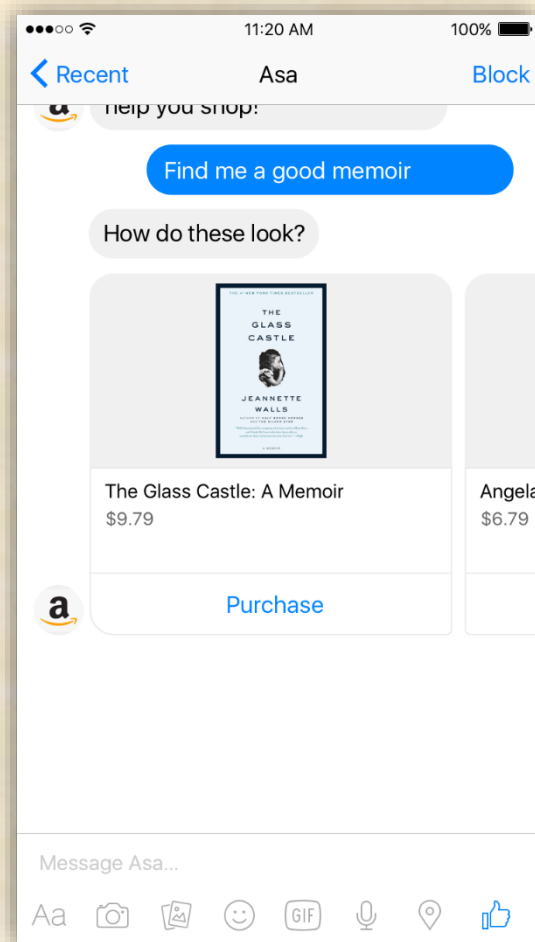
**Figure 3: No extra options**



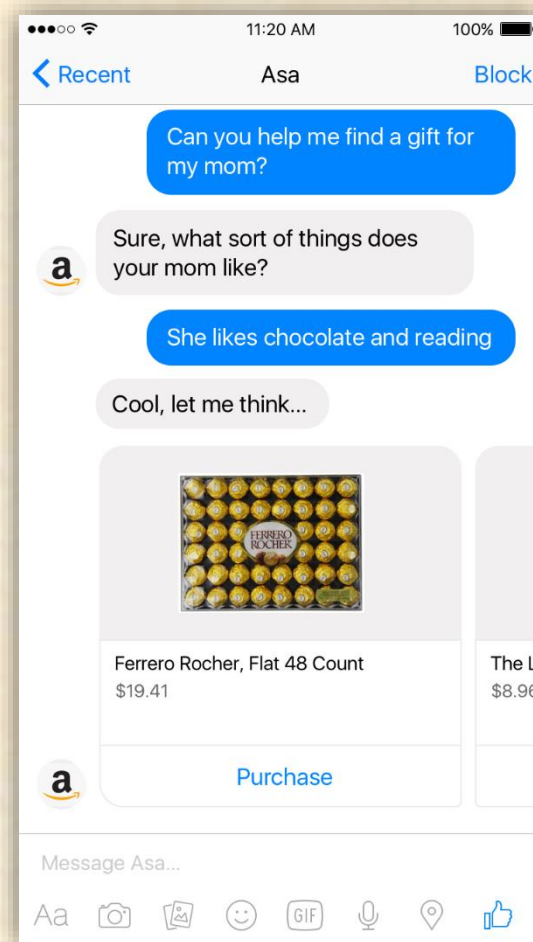
**Figure 4: Extra options**  
(using quick replies)



# Screen Mockup: Item Recommendation



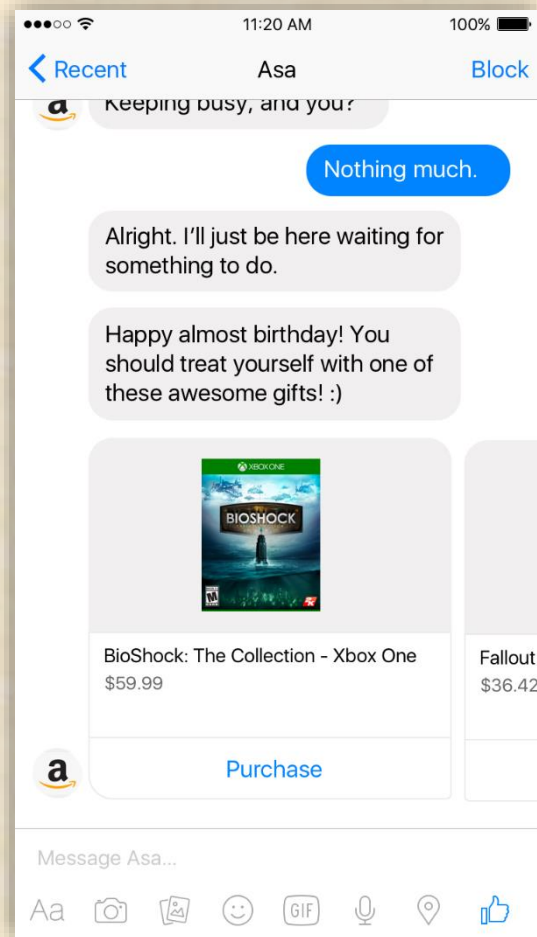
**Figure 5: Recommend item**



**Figure 6: Recommend gift**



# Screen Mockup: Bot-initiated Recommendation



**Figure 7:** Bot initiated recommendation

# Technical Specifications

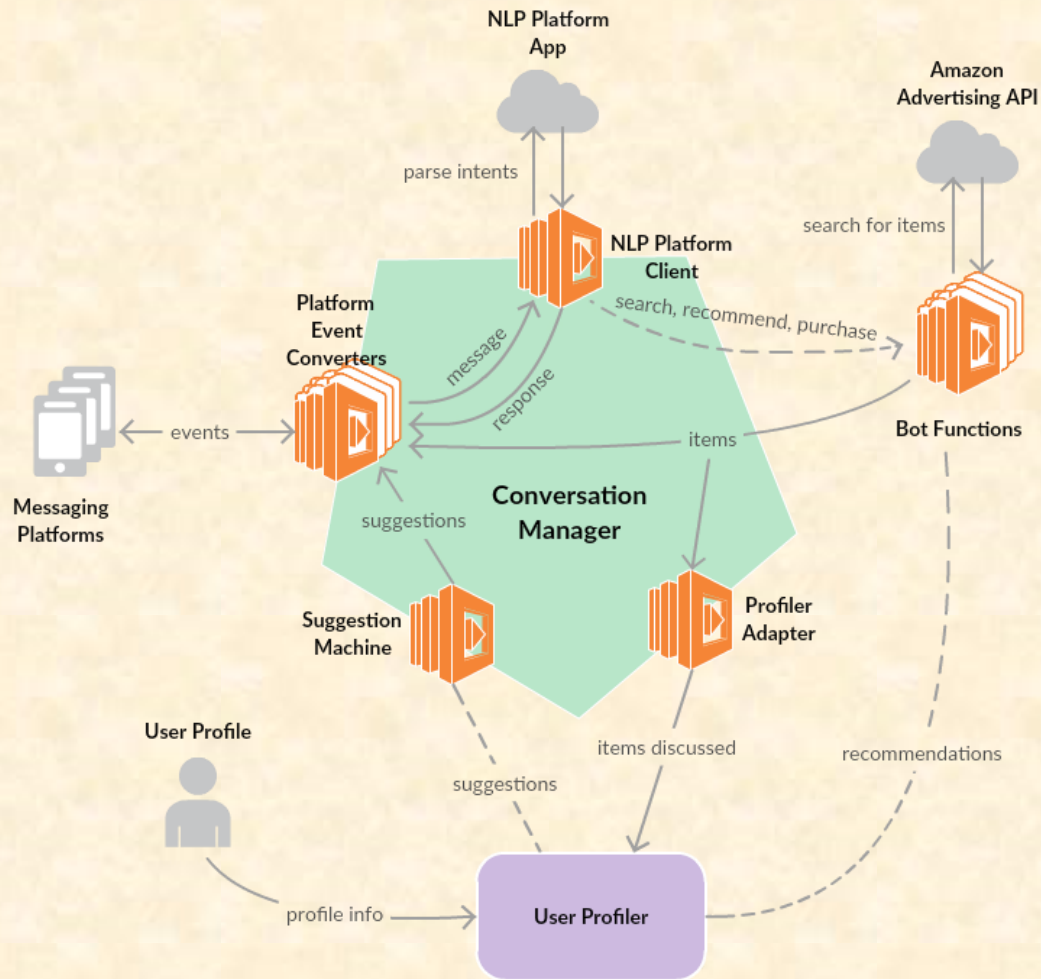
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- Deploy on serverless architecture
  - AWS Lambda, AWS API Gateway
- Support various messaging platforms
- Communicate with natural language
- Search products on Amazon
- Tailor recommendations to user





# System Architecture



# System Components

- Hardware Platforms
  - AWS Lambda & AWS API Gateway serverless infrastructure
  - AWS DynamoDB for any sort of persisted data
- Software Platforms / Technologies
  - Node for runtime
  - Facebook Messaging API / Twilio / Slack Events API
  - Wit.ai for NLP platform
  - Amazon Product Advertising API for searching items
  - Apex / Babel for build and deployments



# Testing

- Unit Testing
  - Mocha / Chai
  - Tested locally and automatically
- Integration Testing
  - Staging / Production environments
  - Tests automated with deployments
- End User Testing
  - Team members, Amazon client, outside parties
  - Use observations to improve Asa



# Risks

- AWS Services (Lambda, API Gateway), Bot Platforms
  - No one on the team has used AWS extensively
  - Mitigation: Read documentation, make prototype bots and deploy to AWS
- Difficulty of Natural Language Processing (NLP)
  - Challenging to retrieve correct intent from a message
  - Mitigation: Utilize existing NLP services as much as possible & lots of research
- Gather extra information about items if needed
  - For something like a shirt, how do we get size, color, quantity info?
  - Mitigation: Quick replies, but still need to figure out how to integrate these into conversation
- Get user information when making suggestions
  - Need a way to retrieve user data for bot-initiated gift recommendations
  - Mitigation: Research Facebook API and make prototype application that can grab the information
- How are we going to learn about a user?
  - No external customer data for model training
  - Mitigation: Depend on Amazon Advertising API, design modular plug-in architecture, explore Facebook API to see what user information is available

