MICHIGAN STATE UNIVERSITY

Project Plan
Digital Banking with Chatbots

The Capstone Experience

Team MSUFCU

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From Students…
…to Professionals

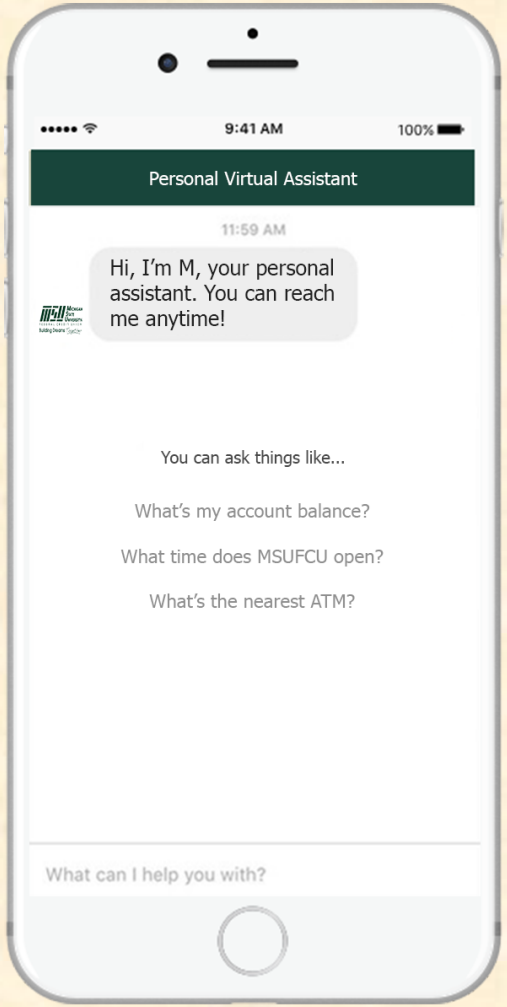
Functional Specifications

- Problem: Being Cost Effective while improving and maintaining a high level of customer service
- Solution: Allow users to perform basic tasks through Web, FB MSG, Google Assistant, and iOS
- How: Digital Chat Bot Assistant
- Hand off to live chat for complex tasks

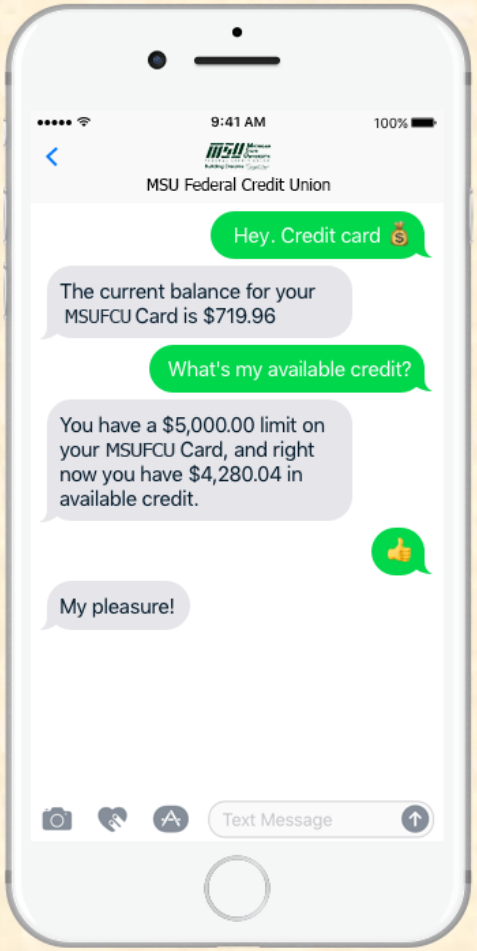
Design Specifications

- Handle:
  - Checking Balances
  - Transfers
  - Lost/Stolen Card
  - New loan/account questions, etc.
- Device interface(Web, FB Messenger, SMS, iOS)
- Voice Controls(Google Assistant, Alexa)

Screen Mockup: iOS and Android



Screen Mockup: iMessage and FB Messenger



Screen Mockup: Alexa

"Alexa, what's my account balance?"

"Alexa, I can't access my bank account."

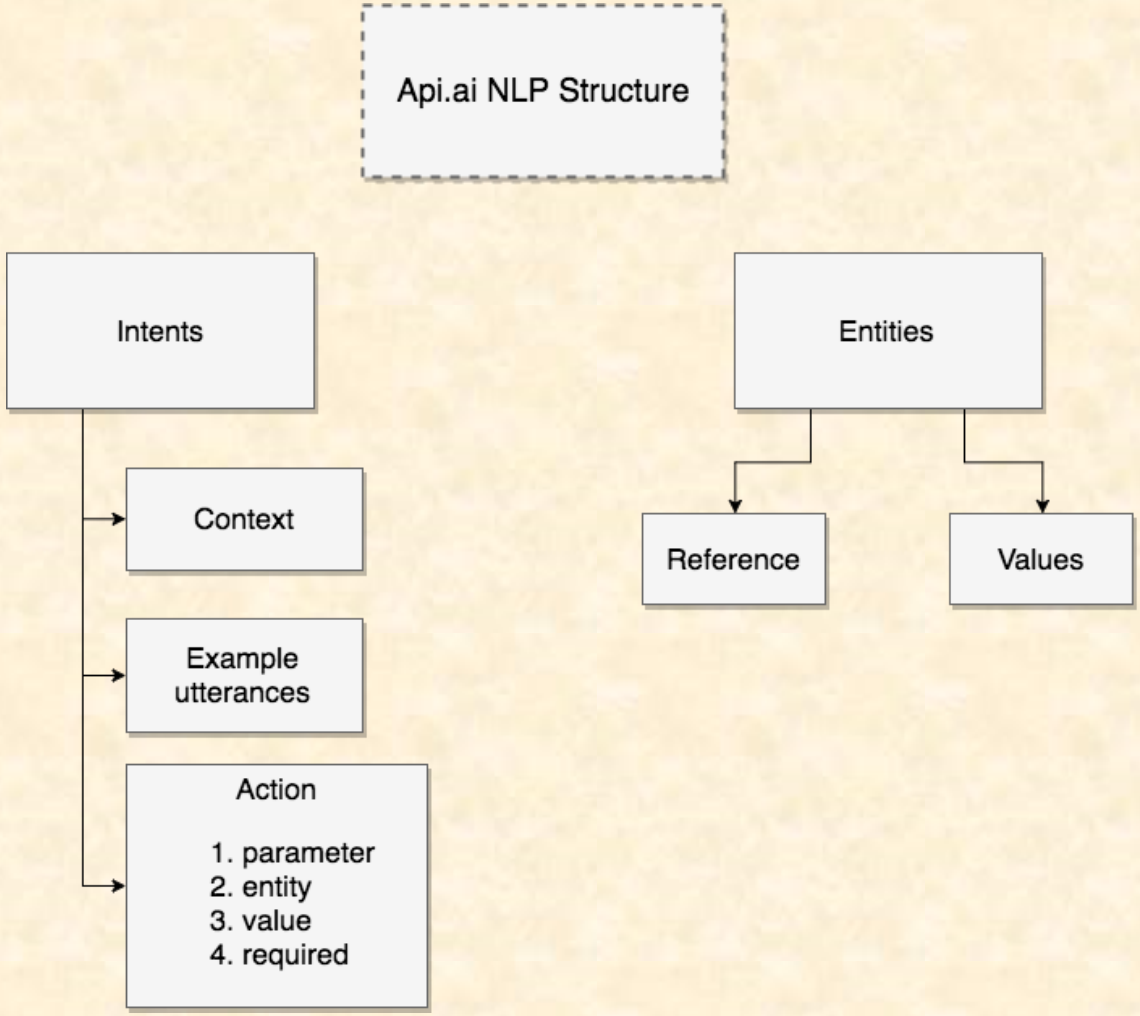
"Alexa, what time does MSUFCU open today?"

"Alexa, show me my last 5 transactions."

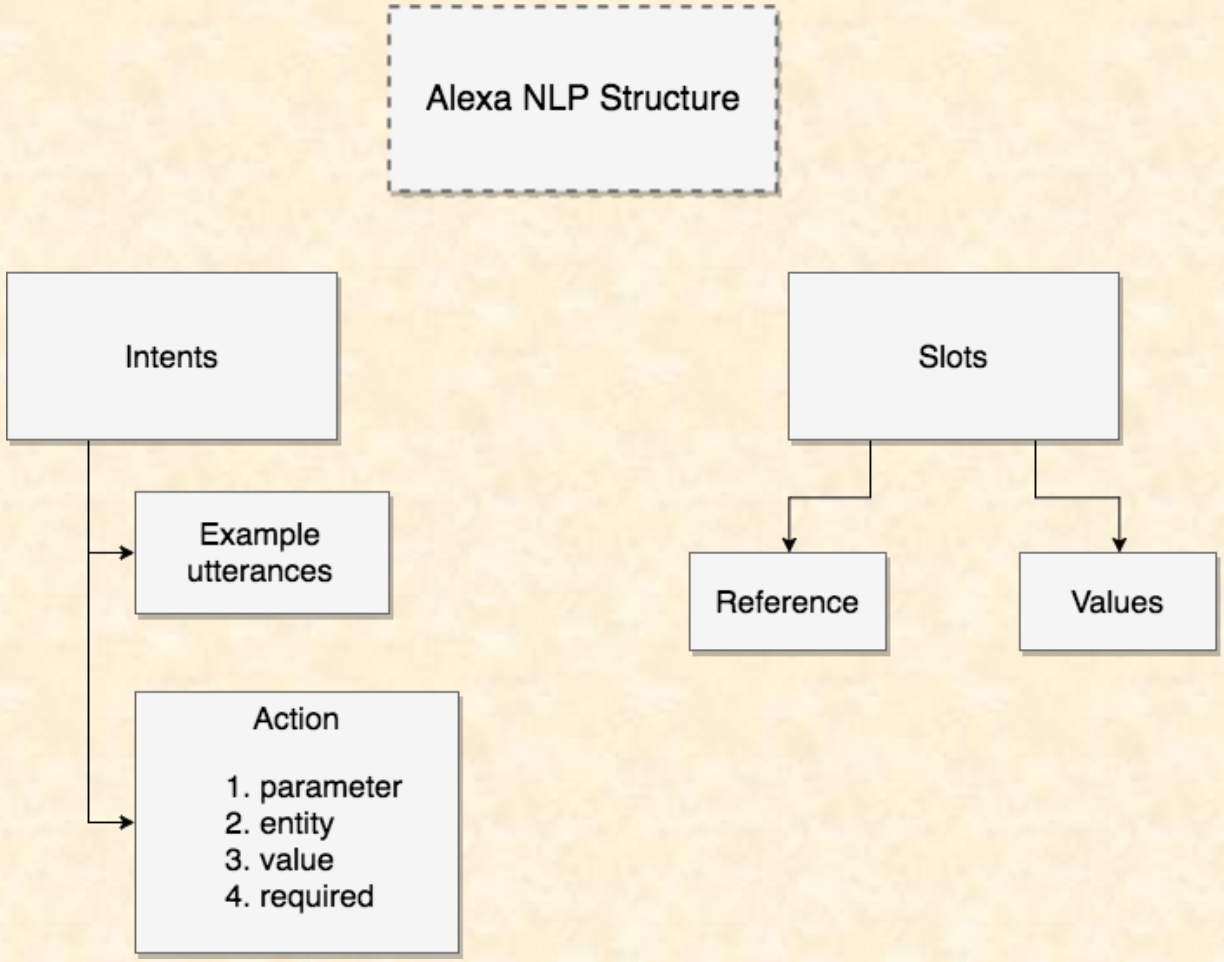
Technical Specifications

- API.AI: Google's NLP kit
  - Integrates with most platforms
  - Centralizes chatbot
- Web chat, FB Messenger, Twilio SMS, iOS app, Google Actions: integration with API.AI
- Amazon Alexa uses separate proprietary NLP platform
- Fulfillment/Webhook: Node.js app that handles routing and logical flow
- API: Node.js/Express app with a SQLite Database
- MSUFCU API: Allows access to customer data

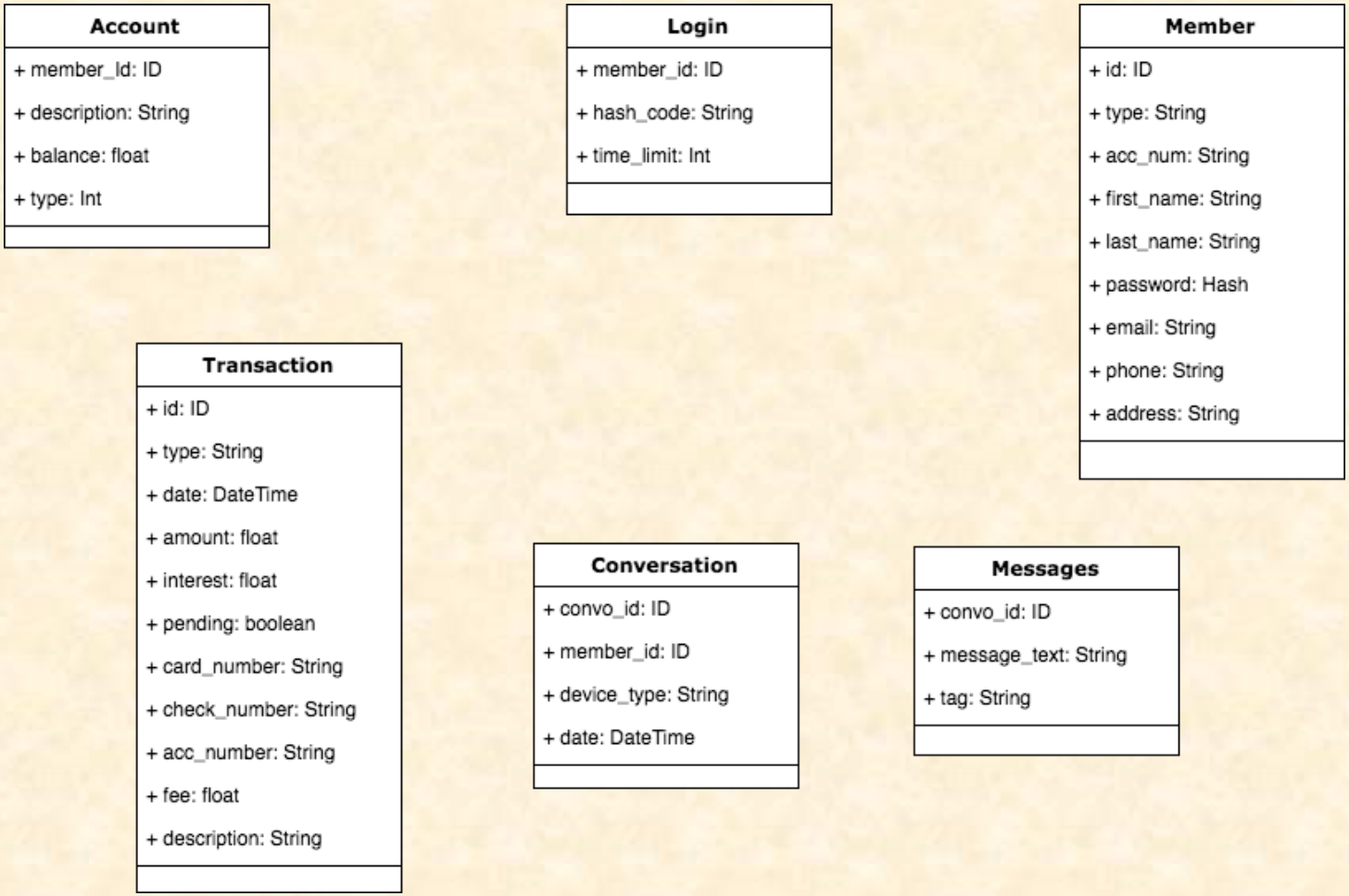
System Architecture: Api.ai



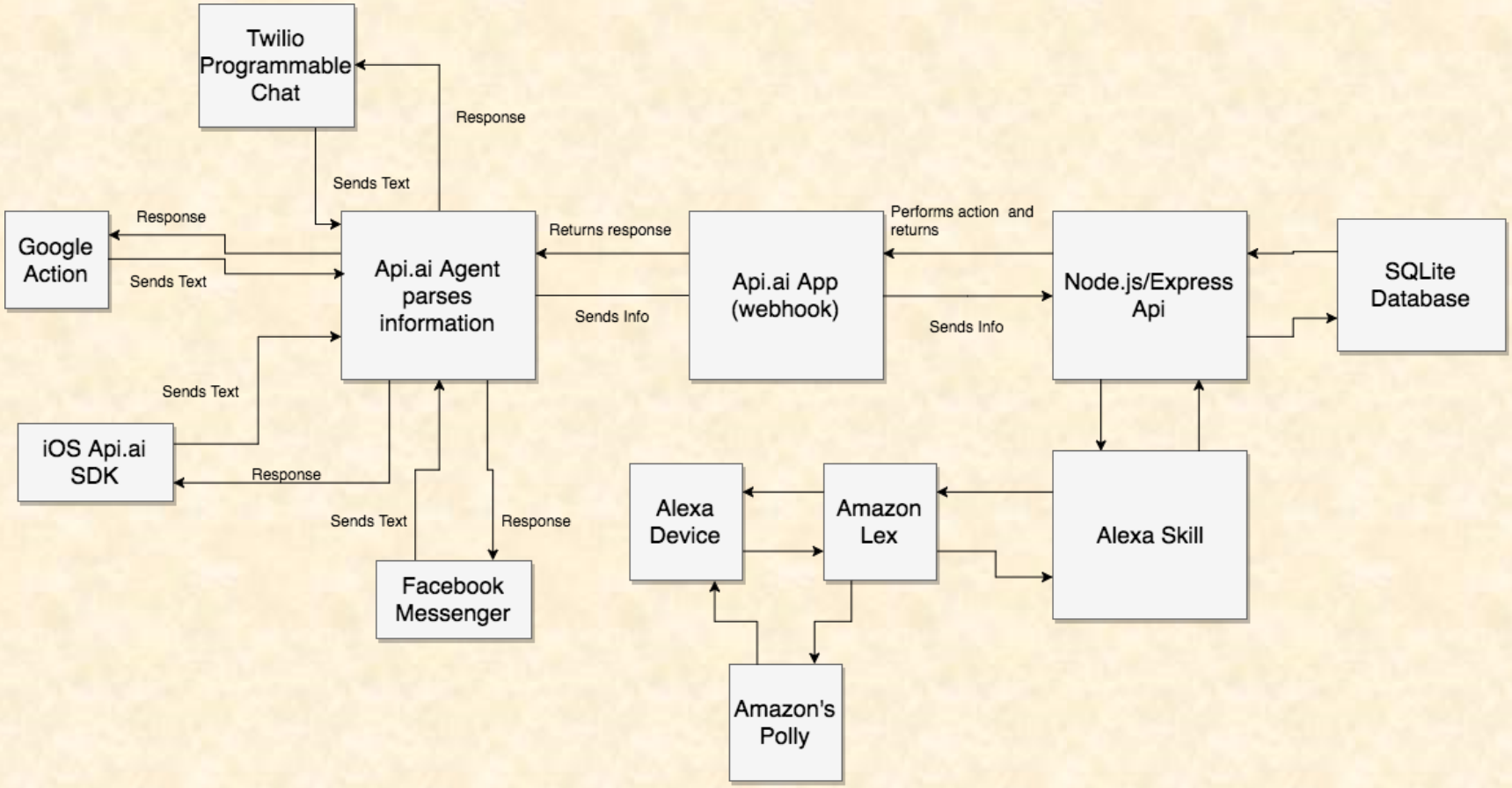
System Architecture: Alexa



System Architecture: Database



System Architecture: App



System Components

- Hardware Platforms
  - Mobile Phones (iOS app, SMS, Facebook Messenger, Google Assistant)
  - Desktop(Facebook Messenger and Web App)
  - Amazon Echo and Echo Tap/Google Home
- Software Platforms / Technologies
  - Android Studio/Xcode
  - API.AI, Amazon Lex/Poly
  - Webstorm

Testing

- Test conversation portion of chatbot by ensuring chatbot responds with context
- Testing logic flow of login to ensure it’s secure and session expires
- Load test Api.ai/API/Database with 3000 requests in a day
- Test chatbot to database through API connection to make sure that data is updated correctly in the database schema
- Testing Twilio from multiple phones to ensure it’s phone number agnostic
- Using Mocha and Chai for Unit Testing(JS Test framework)
- Custom Testing platform for automating voice testing to hit API

Risks

- Risk 1
  - Potential vulnerability of intercepting confidential data from database
  - Integrate SSL to create an encrypted tunnel between client and server
- Risk 2
  - Gaining access to an unauthorized bank account
  - Implement robust user access control to provide access to authorized users only
- Risk 3
  - Client wants apps on a variety of different platforms
  - Determined Google's API.AI is the best fit as it has integrations for multiple platforms. Prioritizing which platforms to focus on through user usage statistics
- Risk 4
  - NLP may not be able to understand what the user says due to accents and pitch
  - Custom testing platform to find words that are similar

Questions?