
ORACLE®

Oracle Digital Assistant

The Complete Training

Domain Knowledge

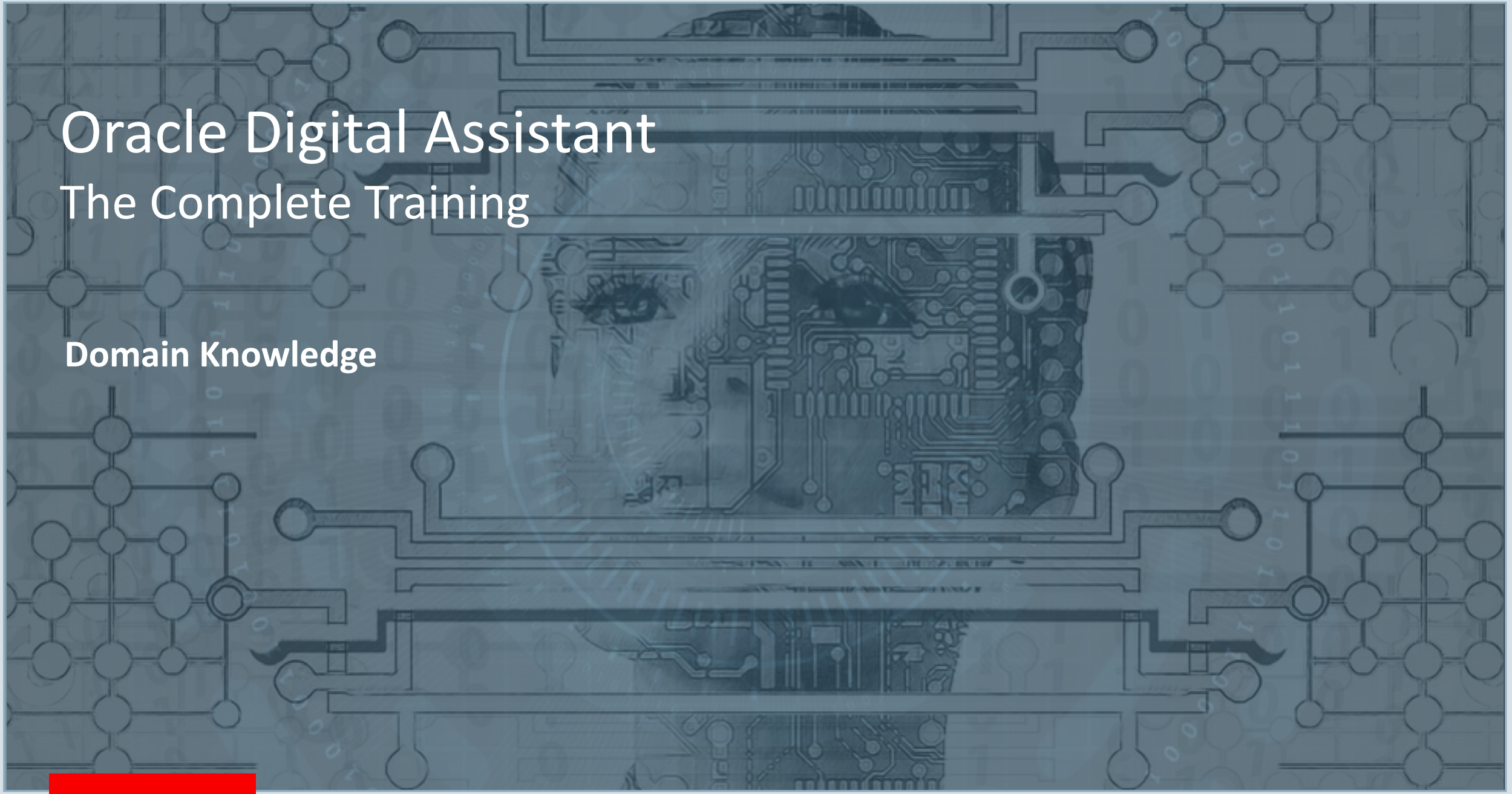

Image courtesy of pixabay.com

Safe Harbor Statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle's products remains at the sole discretion of Oracle.

Program agenda

1. Chatbot key components
2. Understanding the terminology of chatbots
3. Introducing skills
4. Introducing digital assistant and routing

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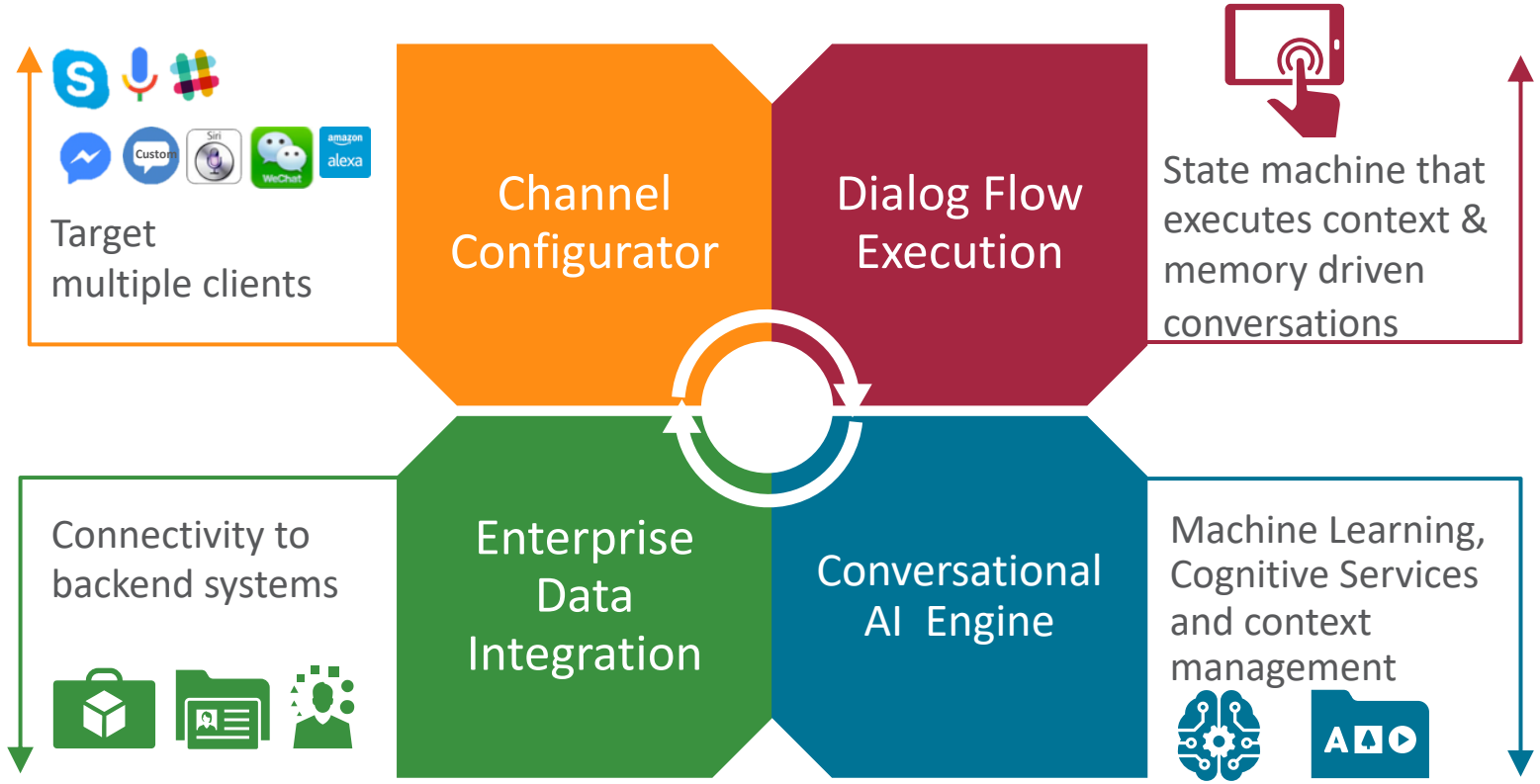
Chatbot components



Program agenda

1. Chatbot key components
2. Understanding the terminology of chatbots
3. Introducing skills
4. Introducing digital assistant and routing

Chatbot terminology - intents

Intent

- Derived from customer input
- What does the user want?
- How is this mapped to action?

"How much money do I have in my checking account?"

Chatbot terminology - intents

Intent

- Derived from customer input
- What does the user want?
- How is this mapped to action?

"What is my current bank balance?"

Chatbot terminology - intents

Intent

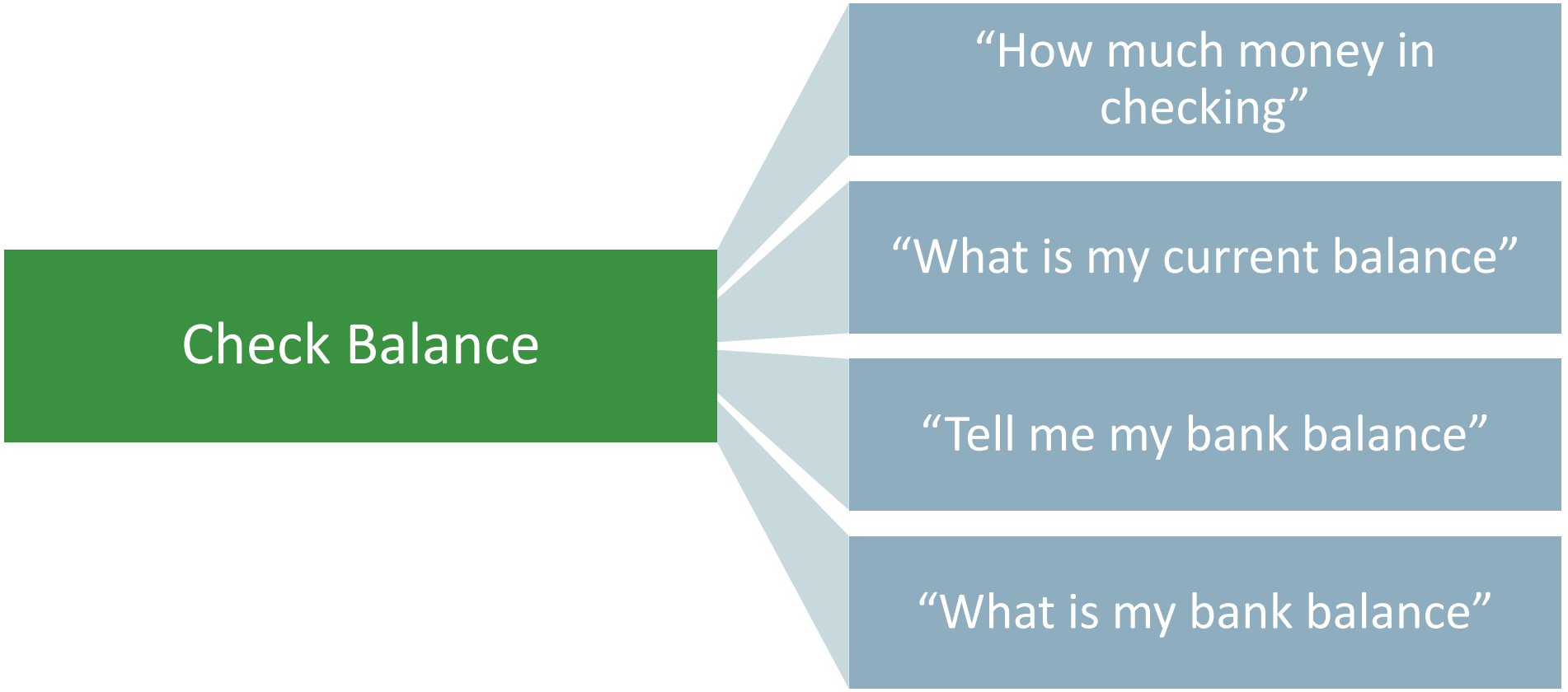
- Derived from customer input
- What does the user want?
- How is this mapped to action?

“How much did I spent in the Apple store last month?”

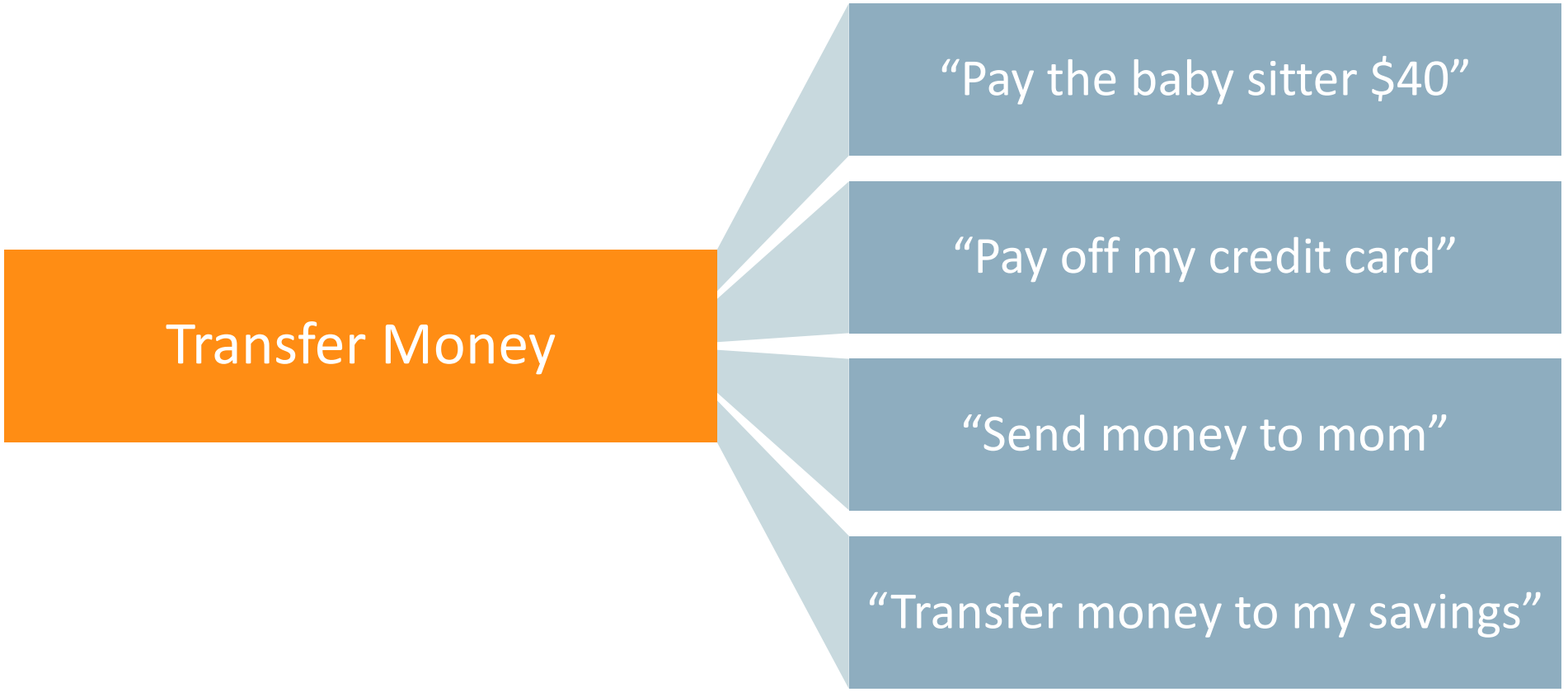
Chatbot terminology - utterances

- **Utterances**
  - Typical statements
  - “Sample data” for an intent
  - Not exact string matching
  - Machine learning
  - Need good pool for utterances

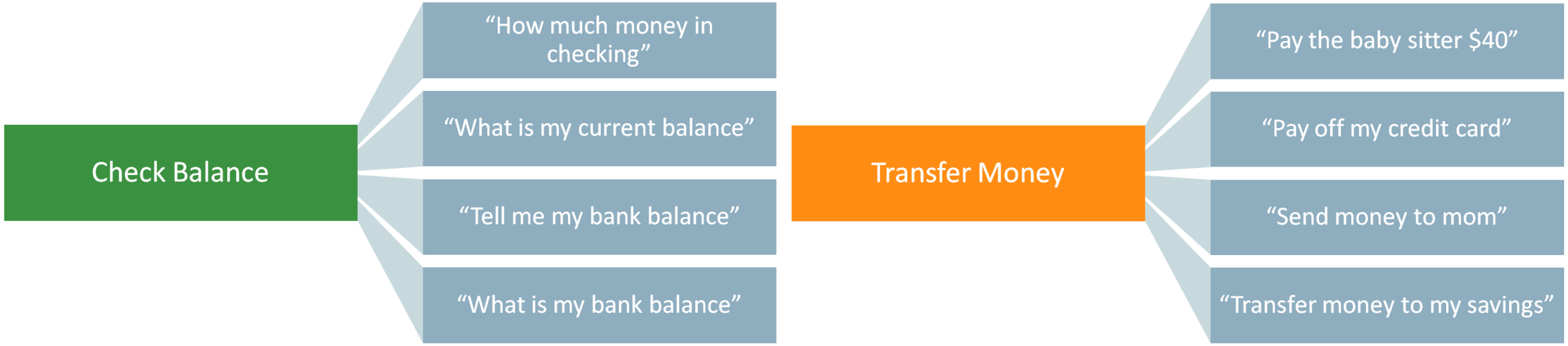
Populating intents with example utterances



Populating intents with example utterances

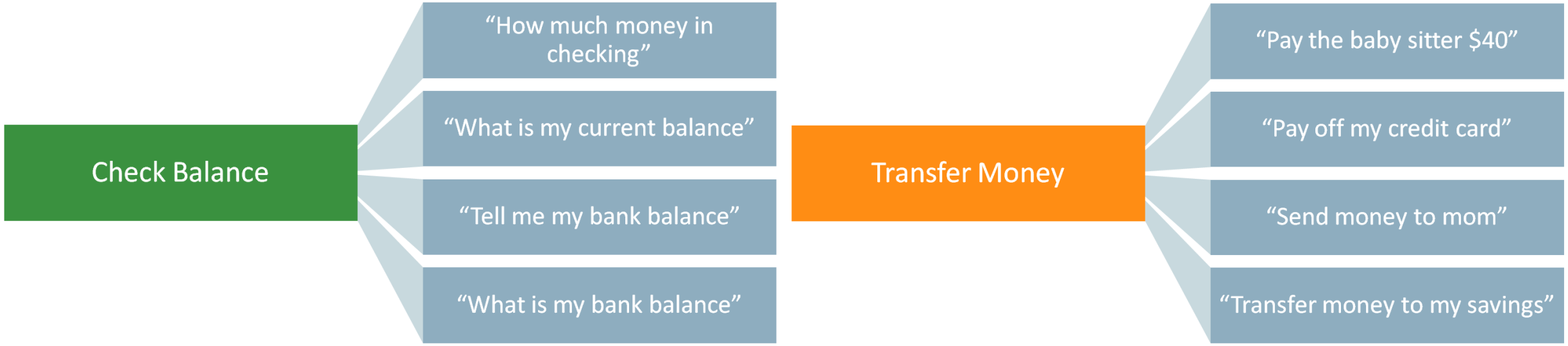


Populating intents with example utterances



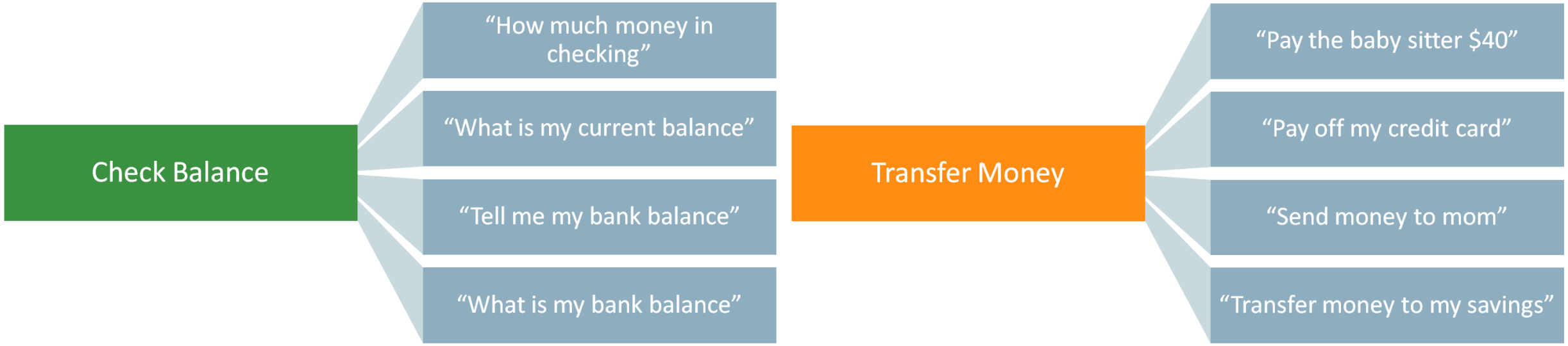
"What's my current balance"

Populating intents with example utterances



"Pay money to my credit card"

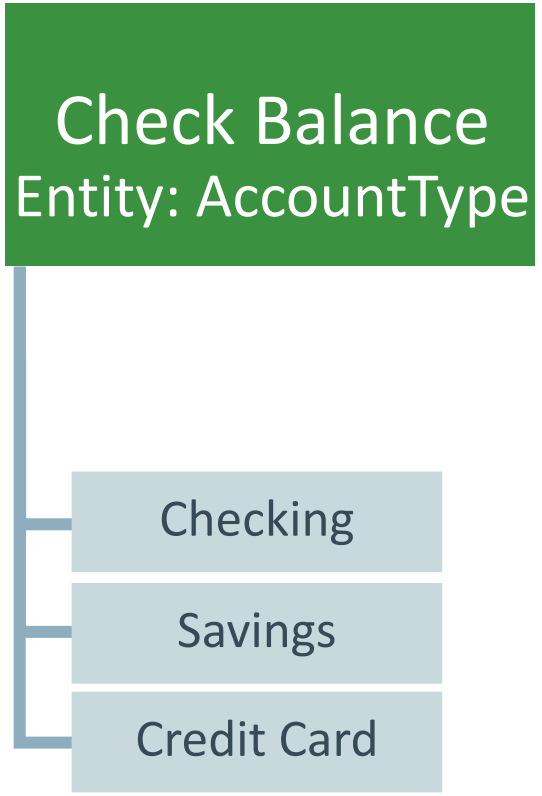
Populating intents with example utterances



"Bank toast balance jam"

Chatbot terminology - entities

- **Entity**
  - Variable/parameter for intent
  - Important word in an input
  - Adds relevance to intent
  - Possibly maps to domain object



"How much money do I have in my checking account?"

Chatbot terminology - entities

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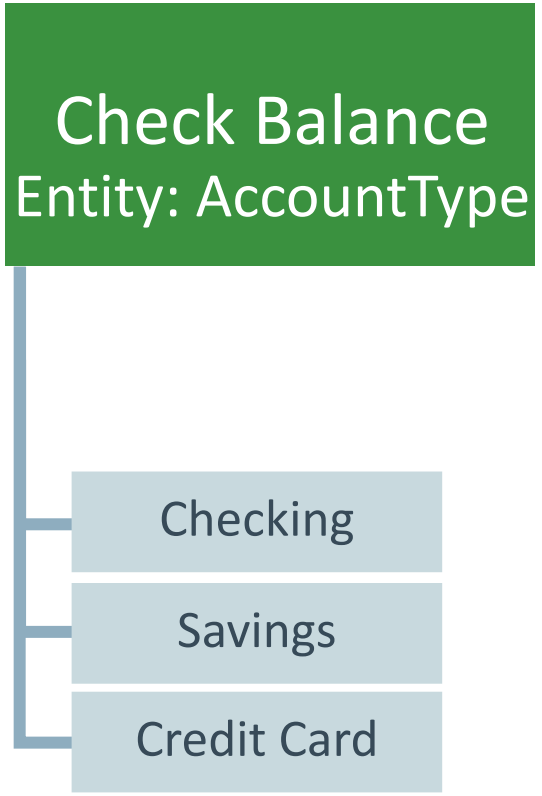

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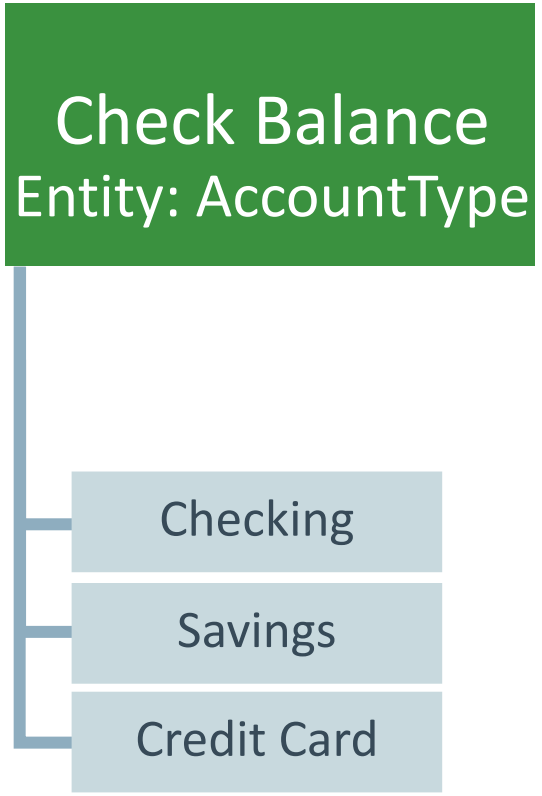

"What's my savings balance?"

Chatbot terminology - entities

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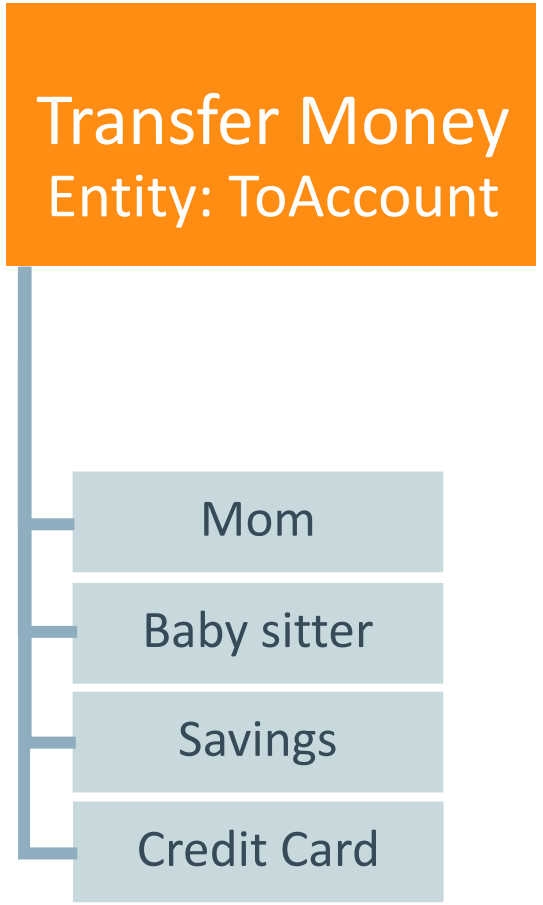
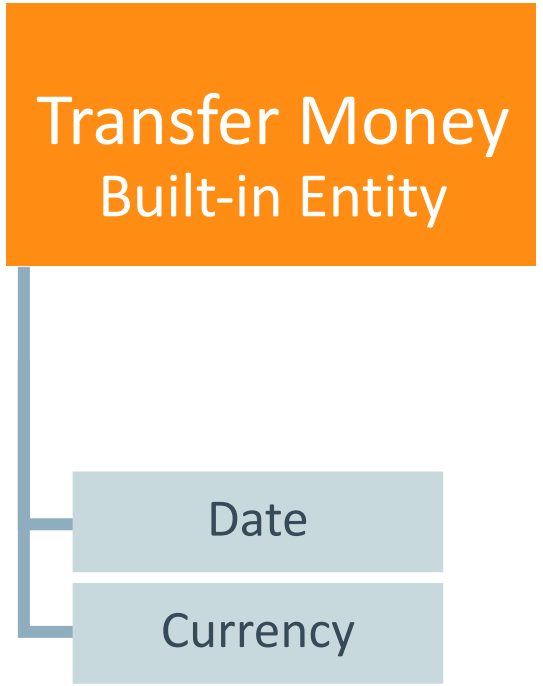


"Transfer money to Mom?"

Chatbot terminology - entities

- **Entity**
  - Variable/parameter for intent
  - Important word in an input
  - Adds relevance to intent
  - Built-in/standard entities



Chatbot terminology - entities

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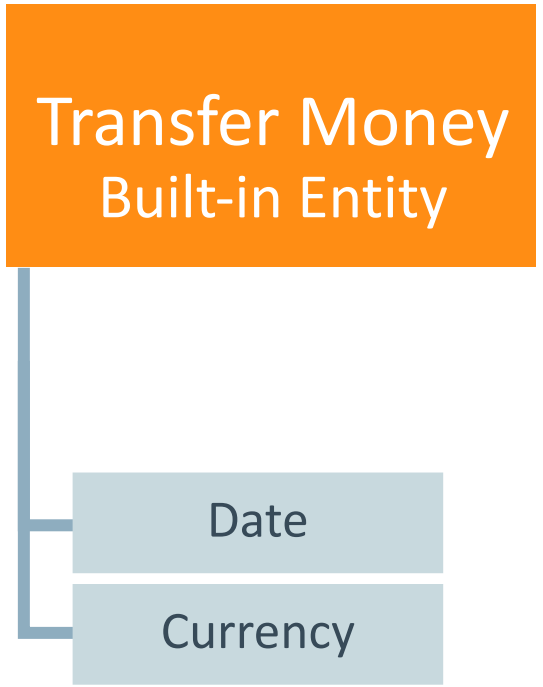

"Transfer $50 to savings tomorrow"

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Chatbot terminology – machine learning/NLP

- **Machine learning/NLP**
  - Language independent ML
  - NLP for added accuracy
  - Natural language processing
  - Prediction based on utterances

Image courtesy of yodiyim at FreeDigitalPhotos.net

Chatbot or apprentice? In the beginning there is little difference

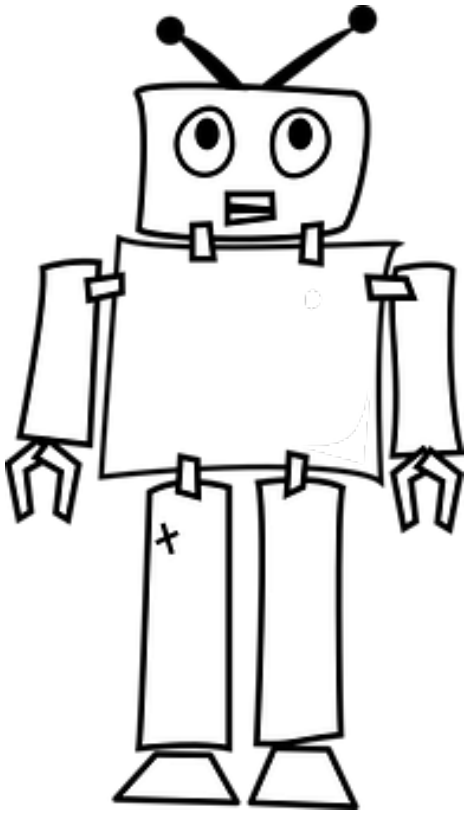


Image courtesy of pixabay.com

Two primary training models

- However, things are evolving as we add new and improved model capabilities
- Trainer Ht
  - Fast & best suited for small set of utterances
  - Good for new development
  - Rules based
- Trainer Tm
  - Thrives on more and more data
  - Higher accuracy when trained with enough data
  - Already trained on “knowledge” of English language

Guidelines for defining utterances for machine learning

Trainer Ht

- Good for getting started, more predictable with smaller data set
  - Specify Intents that can be disambiguated clearly via utterances
  - Unique, (semantically) related sentences are great
    - Ex: “Pay the babysitter”, “Send money to mom”
  - Aim for one to two dozen high quality utterances an intent
  - Define entities to help intent resolution
  - Weight intents using short phrases with key differentiating words
- Avoid at all costs!
  - “do {word}” and “do {opposite word}” in the opposite intent

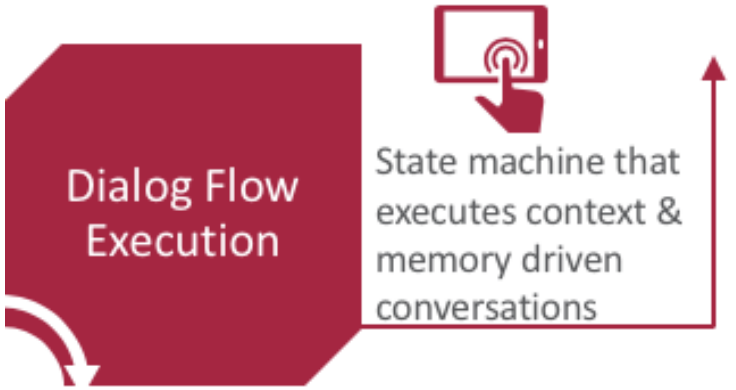
Guidelines for defining utterances for machine learning

Trainer Tm

- Longer to train and thrives on more and more data
  - Less accurate with small corpus, much more accurate with larger corpus
- Generally use “undiluted” real customer phrases
  - Use enough of these and the machine “learns” how customers really interact
  - Obviously you should remove any malicious/fake input
- Training the bot should be an iterative and on-going process with new data
- Tm is the best long term model for production chatbots

Chatbot terminology – dialog flow

- **Dialog flow**
  - Manages conversation flow
  - State and context
  - What to do based on an input




```
metadata:
  platformVersion: "1.0"
main: true
name: "FinancialBotMainFlow"
context:
  variables:
    accountType: "AccountType"
    txnType: "TransactionType"
    txnSelector: "TransactionSelector"
    toAccount: "ToAccount"
    spendingCategory: "TrackSpendingCategory"
    paymentAmount: "CURRENCY"
    iResult: "nlpresult"
    iResult2: "nlpresult"
    transaction: "string"
    dispute: "string"
    amount: "string"
    merchant: "string"
    date: "string"
    description: "string"
states:
  intent:
    component: "System.Intent"
    properties:
      variable: "iResult"
      confidenceThreshold: 0.4
    transitions:
      actions:
        Balances: "startBalances"
        Transactions: "startTxns"
        Send Money: "startPayments"
        Track Spending: "startTrackSpending"
        Dispute: "setDate"
        unresolvedIntent: "unresolved"
  startBalances:
    component: "System.SetVariable"
    properties:
      variable: "accountType"
      value: "${iResult.value.entityMatches['Acc
    transitions: {}
```

Program agenda

1. Chatbot key components
2. Understanding the terminology of chatbots
3. Introducing skills
4. Introducing digital assistant and routing

What are skills?

- Skills are ***individual chatbots*** that are designed to interact with users and *fulfill specific tasks*, such as ordering food, making reservations, and changing contact information

- Each skill helps a user complete a task through a combination of text messages and simple UI elements like select lists

The benefits of skills

- Each skill can focus exclusively on its own domain
  - Improves intent classification within each skill
  - Modularizes functions and enables incremental development
  - Simplifies versioning and lifecycle management
- Dramatically simplifies dialog flow development
  - Conversational Designers need not worry about (and design for) skill disambiguation
  - Built-in Digital Assistant skills reduces code in each individual skill
- Improves non-sequitur/off topic handling
- Enables segmented authorization

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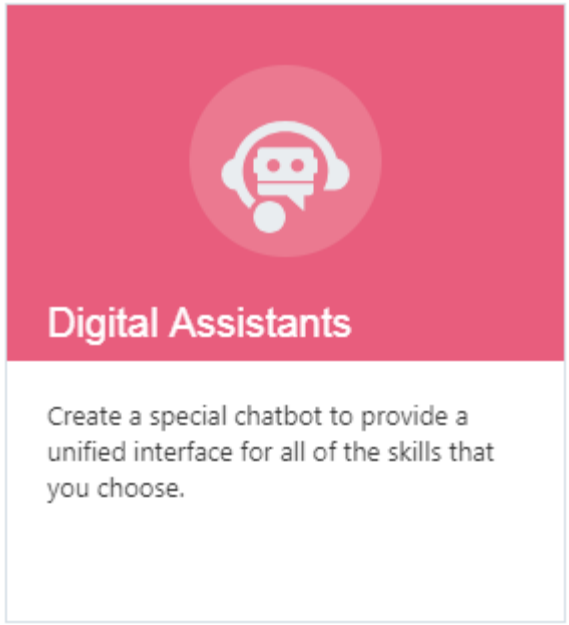
What is a digital assistant?

- An AI-driven collection of skills
- Advantages
  - Assemble based on developed skills or from skill store
  - Automatically matches user input to most appropriate skill
  - Greets the user on access
  - Upon request, lists what skills and use cases it supports
  - Handles interruptions to flows
  - Handles disambiguation
  - Explicit invocation
  - Exit and help requests



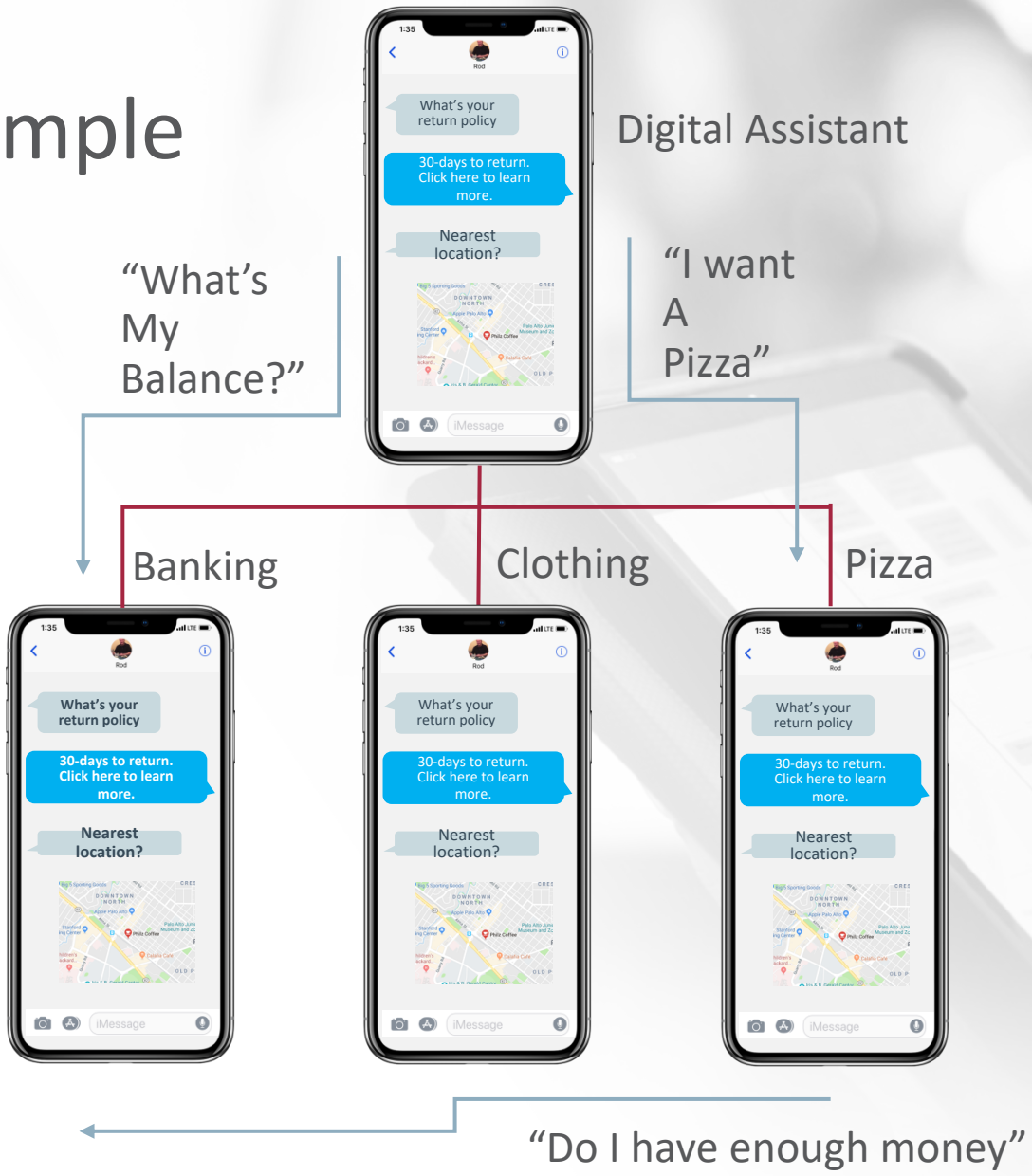
What is routing?

- A key aspect of Oracle Digital Assistant
  - Enables richer, more human-like interactions
- A “conversational air traffic control”
  - Controls the overall “flow” of a conversation between and within skills
  - Necessary for the orchestration of skillbots

Skill routing example

Digital Assistant routes requests to the right skill bots:

- Explicit routing – “Ask Banking Bot my savings balance”
- Implicit routing – “What’s my savings balance?”



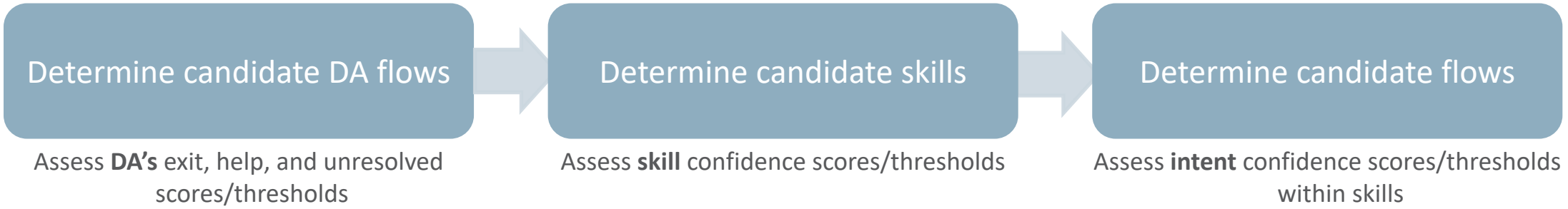
Skill benefits:

- Modularize functions
- Enable incremental development
- Simplify code management
- Improve non sequitur handling
- Simplify versioning and LCM
- Enable segmented authorization

The digital assistant routing model – what it does

- The Digital Assistant evaluates each input (user utterance) to determine "where it belongs" and thus decides how to respond
- The options for routing an input are:
  - To a built-in Digital Assistant intent
  - To a new skill
  - To a different intent (state) within the current skill

The base routing model layers



- ***NOTE**: There are special cases that impact the base routing model. (We'll cover them shortly)*

Integrated Cloud

Applications & Platform Services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