

ORACLE®

Oracle Digital Assistant

The Complete Training

Oracle Digital Assistant Overview

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.

Topic agenda

- 1 ➤ About Oracle Digital Assistant
- 2 ➤ Skills
- 3 ➤ Digital Assistant
- 4 ➤ Channels

Topic agenda

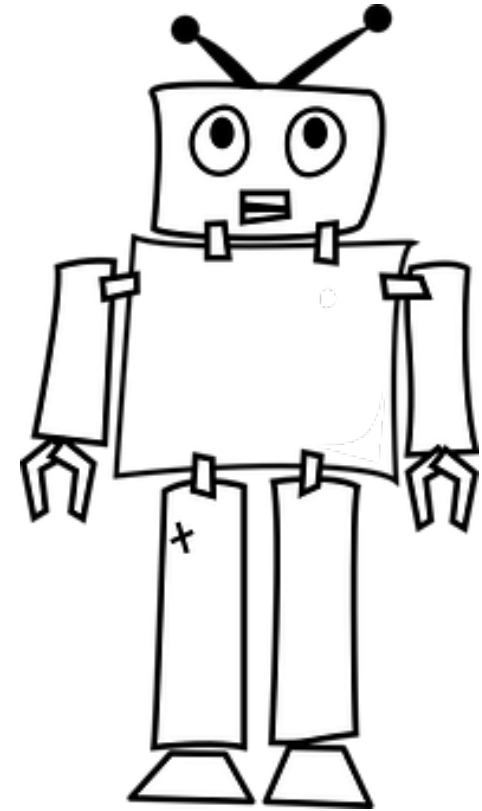
- 1 About Oracle Digital Assistant
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Digital Assistant

- Until now, chatbots solved simple business problems
 - Customer service automation
 - Automation of structured processes
 - Self-service
- Digital assistants are user oriented
 - Assist users with various related or unrelated tasks
 - Conversations are context aware
 - Assistants learn about the user
- Digital assistant is the future of chatbots



A digital assistant is a **computer program that uses artificial intelligence and machine learning** to combine independent chatbots into a single conversational interface that assists real users throughout their day



From chatbots to digital assistants

GEN 2: Digital Assistant

- Bot initiated
- Multiple skills



Gen 3: Digital Assistant

- Proactive
- Headless bots



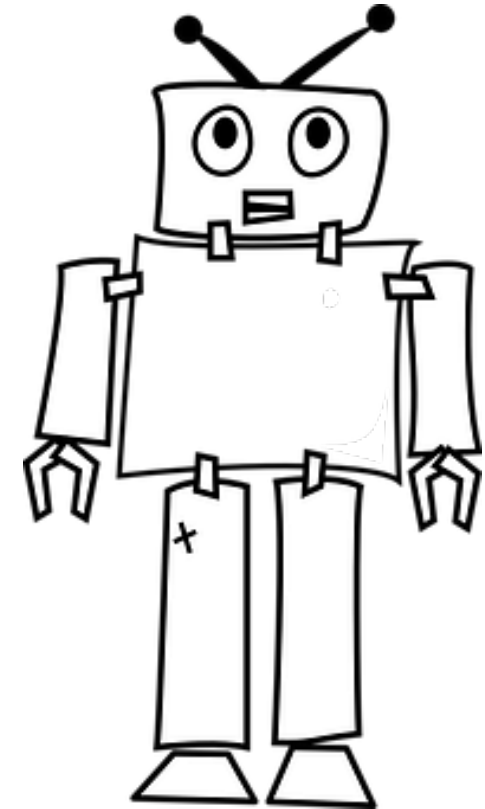
GEN 1: Chatbots

- User initiated
- Single skill (bots)

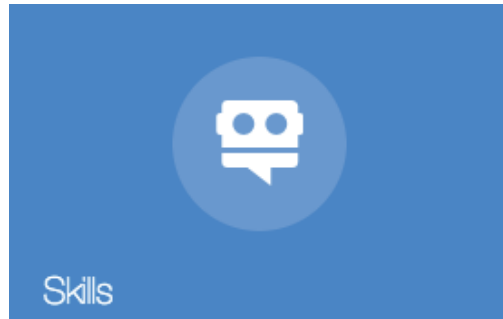
Employee self service digital assistant example



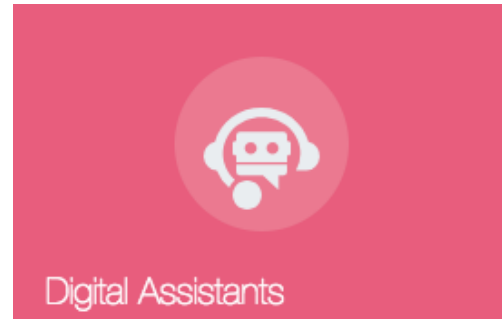
Oracle Digital Assistant is Oracle's 2nd generation intelligent bot platform for customers **to build composite chatbot solutions** from independent skills



Oracle Digital Assistant core modules



- Individual chatbots
- Reusable
- Conversational AI and ML
- Work with any messenger



- "Master bot"
- Invokes skills
- Performs smart routing
- Disambiguates bot request if needed

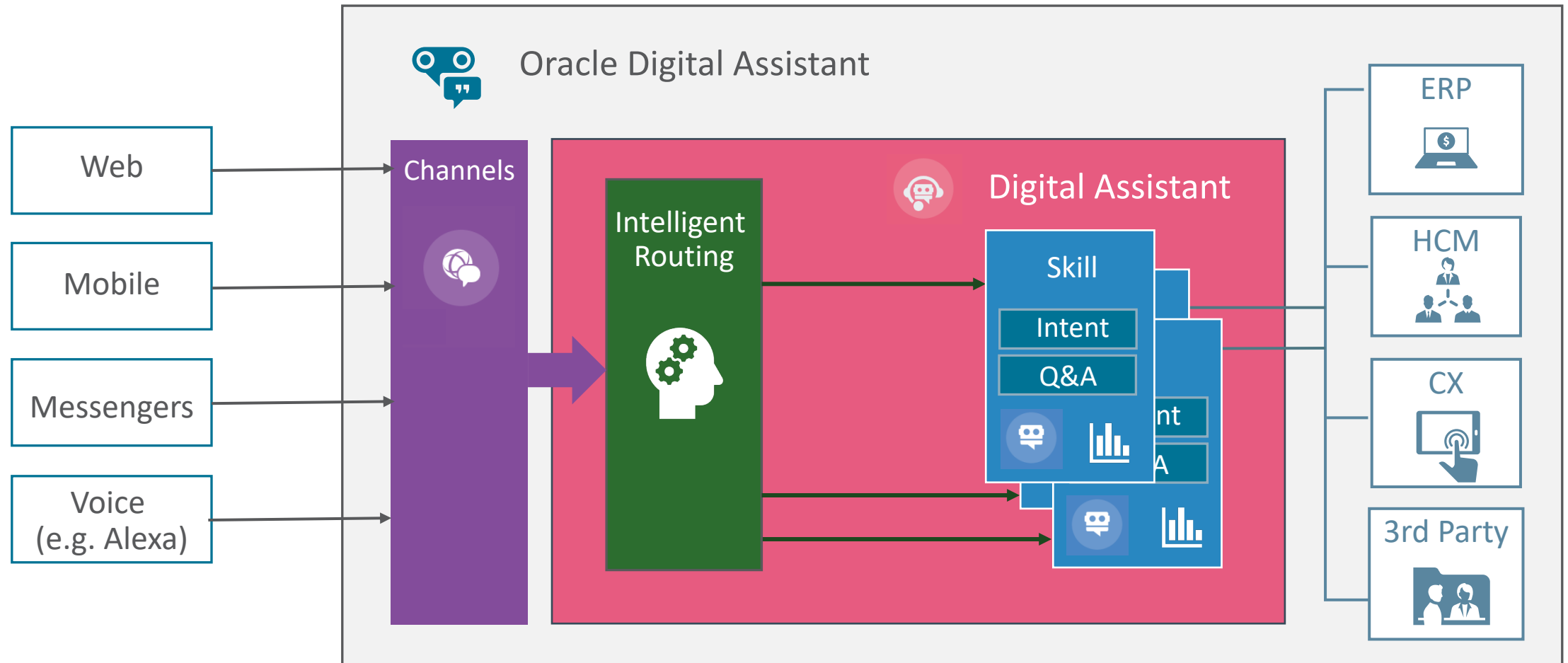


- Messenger connectivity
- Webhook
- Native Channels
 - iOS, Android
 - Web
 - SMS
 - Facebook
 - WeChat
 - etc.



- Bot store
- Like App Store
- Contains bots from
 - Oracle SaaS

Oracle Digital Assistant



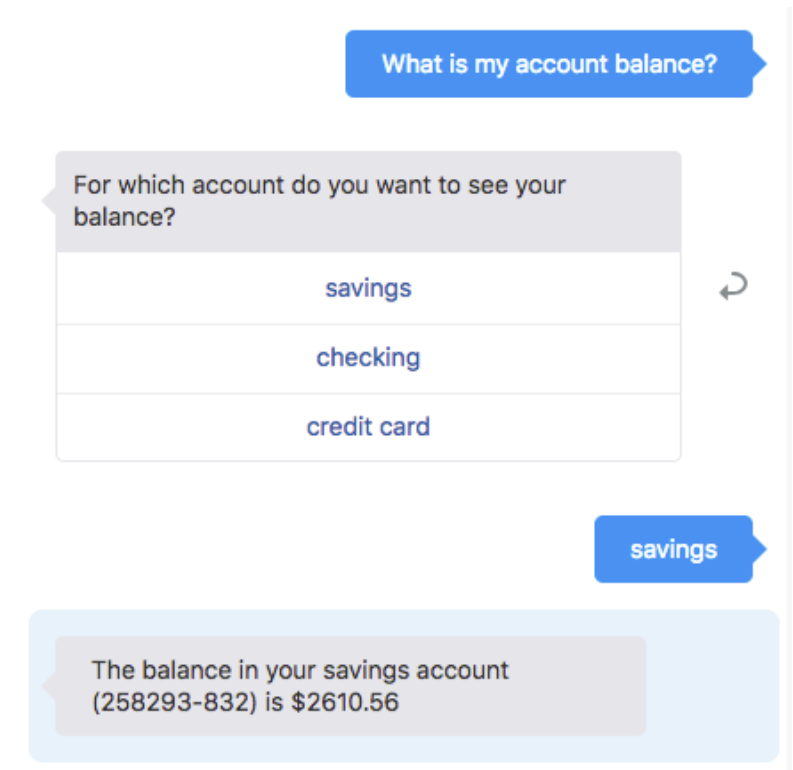
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Skills

Intent resolution and entity extraction

- Skills may or may not use natural language processing (NLP)
 - Its common practice though that they do
- User messages are interpreted by a trained model
 - Intents are resolved and mapped to a dialog
 - Entity values are extracted from user message
- Skills in digital assistant may use different training models

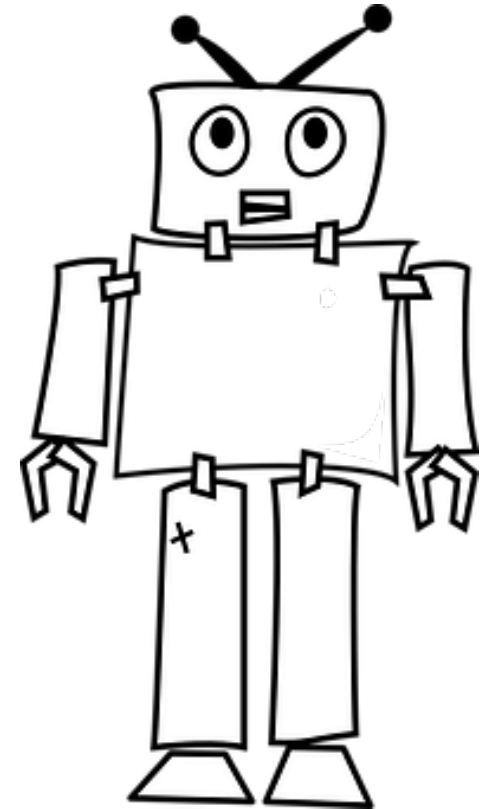


Skills

Conversation flows

- Conversation flows define "the chat"
 - The interaction between user and skill results in the completion of a task
- Conversation flow design
 - Dialog flows
 - Managed by dialog flow engine
 - Scripted interactions that may be skipped conditionally
 - Composite bag entities
 - Smart data objects that assemble information from NLP and user interaction dialogs
 - Don't require a written dialog flow

Successful chatbots need to do **more**
than just having a **conversation**



Skills

Embedded intent tester

- Natural language understanding tester
 - Accessible from intent builder panel
- Confidence level to which an intent is resolved
- Displays extracted entities and values
- Allows batch testing
 - E.g. use data from the logs to frequently test the bot understanding
 - Helpful after model retraining

The screenshot displays the 'Try Out Intents/Q&A' interface. At the top, there's a header with 'Try Out Intents/Q&A' and a 'Reset' button. Below the header, there are tabs for 'Intent' and 'Q&A'. A 'Batch' toggle switch is visible. The main area shows a blue speech bubble with the text 'I like to order 12 red roses for overnight delivery'. Below this, there's a table showing the resolved intent and its confidence level.

Intent	Confidence
OrderFlowers	100%
TrackOrders	0.00%
OpenFranchise	0.00%

Below the table, there's a 'Show More' link. Further down, there's another table showing the extracted entities and their values.

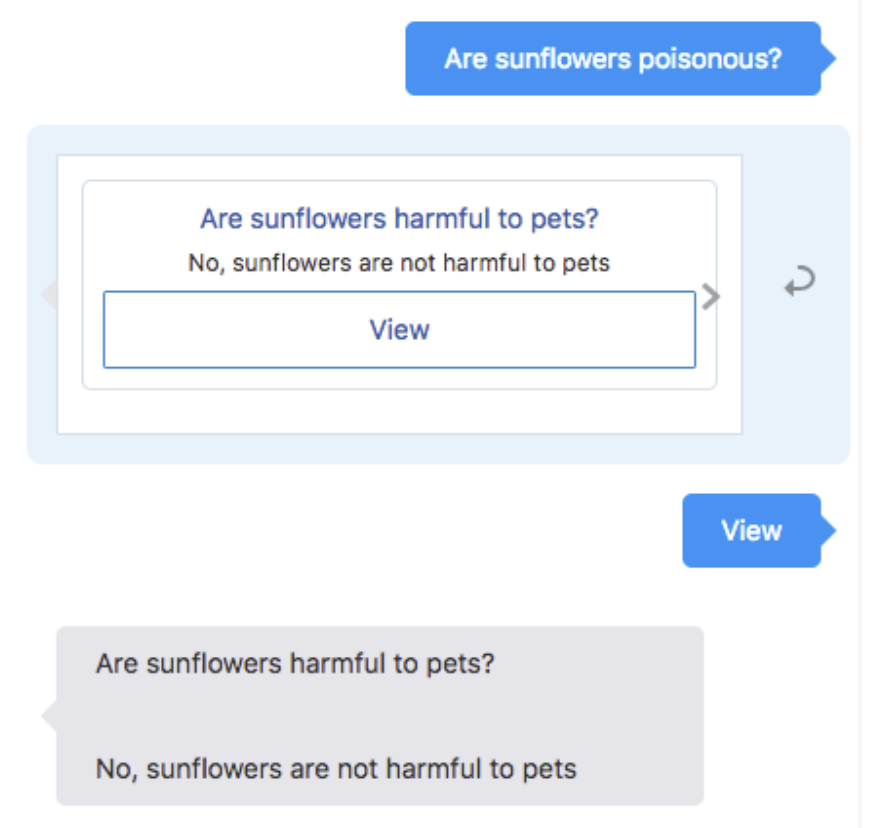
Entity	Value
DeliveryType	overnight, overnight
Flowers	Roses, Roses
NUMBER - number	12
NUMBER - type	Integer

At the bottom right, there's an 'Add Example' button. Below the entity table, there's a 'JSON' link. At the very bottom, there's a text input field containing the same test input and a 'Send' button.

Skills



Q&A module

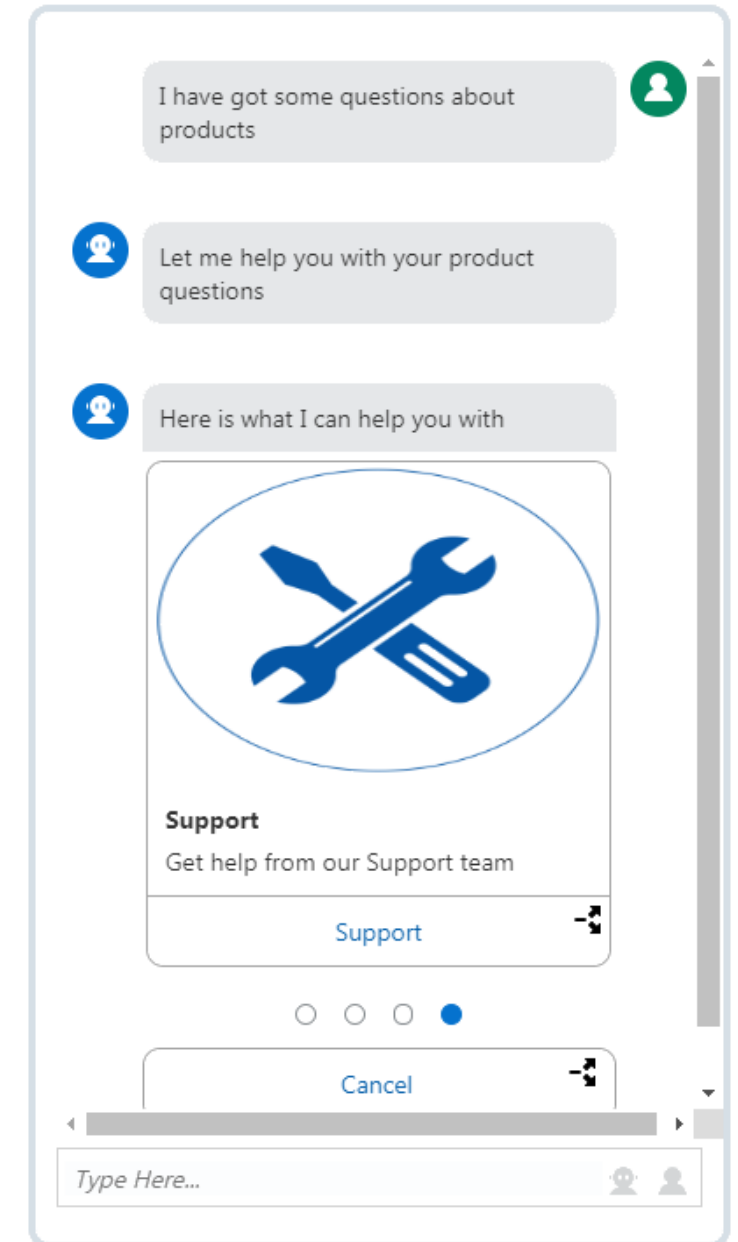
- Sometimes a question is what it is; a question
- FAQ is a top use case for digital assistant
- Natural conversation is a mix of statements and questions
- Oracle skills allow you to integrate Q&A in a bot conversation
 - More engaging than a pure Q&A bot
 - Q&A imported from CSV file



Skills

Conversation designer

- Build skill based on a sample conversation
- Allows user to mock up a conversation
 -  Define what the person says
 -  Define what the bot says
- Automatically detects intent and entities
- Conversation can be branched
- Generates a working skill



Skills

Structured data input

- Conversation design is a challenge
 - Heavy data entry
 - Users change their mind
 - Users get stuck
- Structured data input forms
 - Execute in a web view
 - Shorten conversations
 - Provide sophisticated UI controls
- System.Webview

I like to book a flight

From which city/airport you will be flying from?

Munich

I apologize, but this does not appear to be a city we fly from. From which city/airport you will be flying from?

Need Help? Cancel

Oracle Airline
Click Book a Flight to continue

Book a Flight
Cancel

From where are you traveling?

From	To
London	Jeddah
	AL Madinah
	Riyadh
	Tabuk
	Abu Dhabi
	Dubai
	Kuwait
	Muscat
	Amman
	Paris
	London
	Sochi
	Cairo
	Alexandria

When are you going?

Departure
12/11/2018

How many are going?

Adults	Child
1	0

Please choose your ticket type

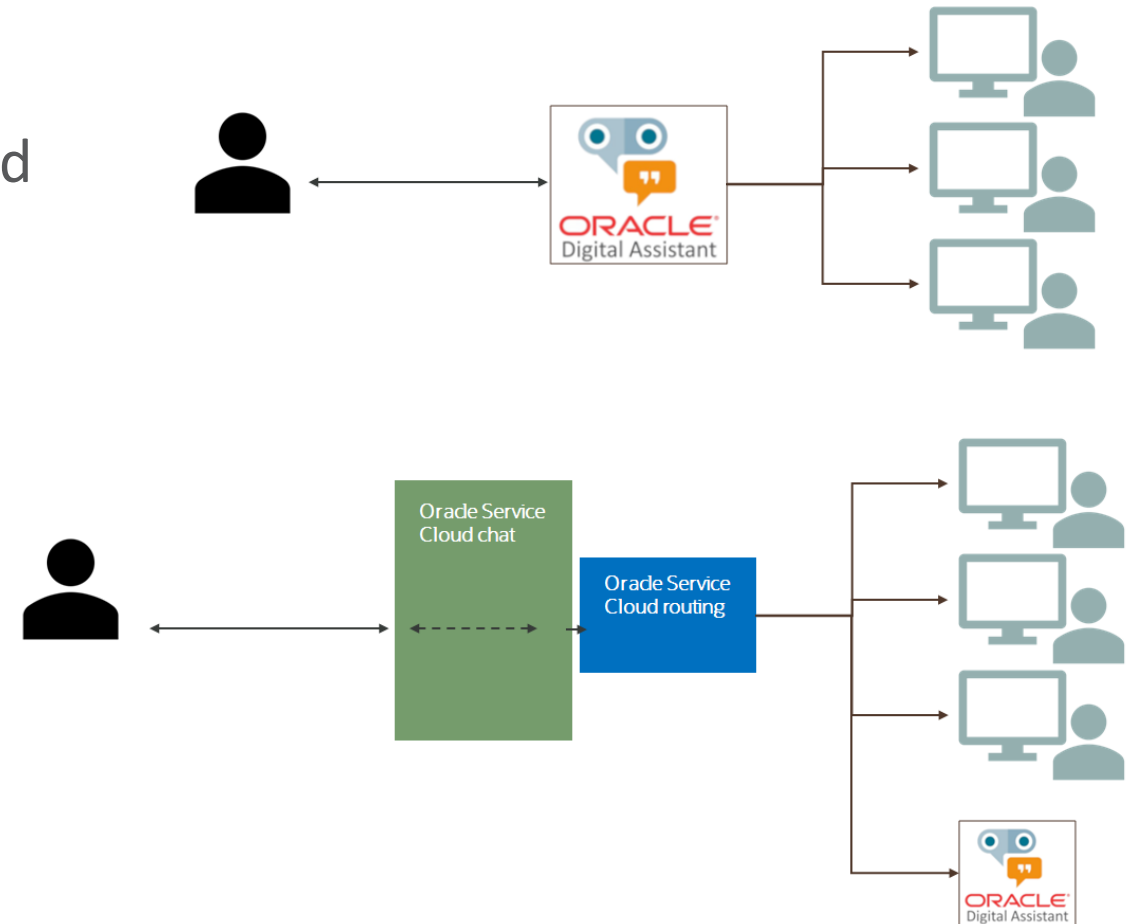
Economy

Go Cancel

Skills

Human agent integration

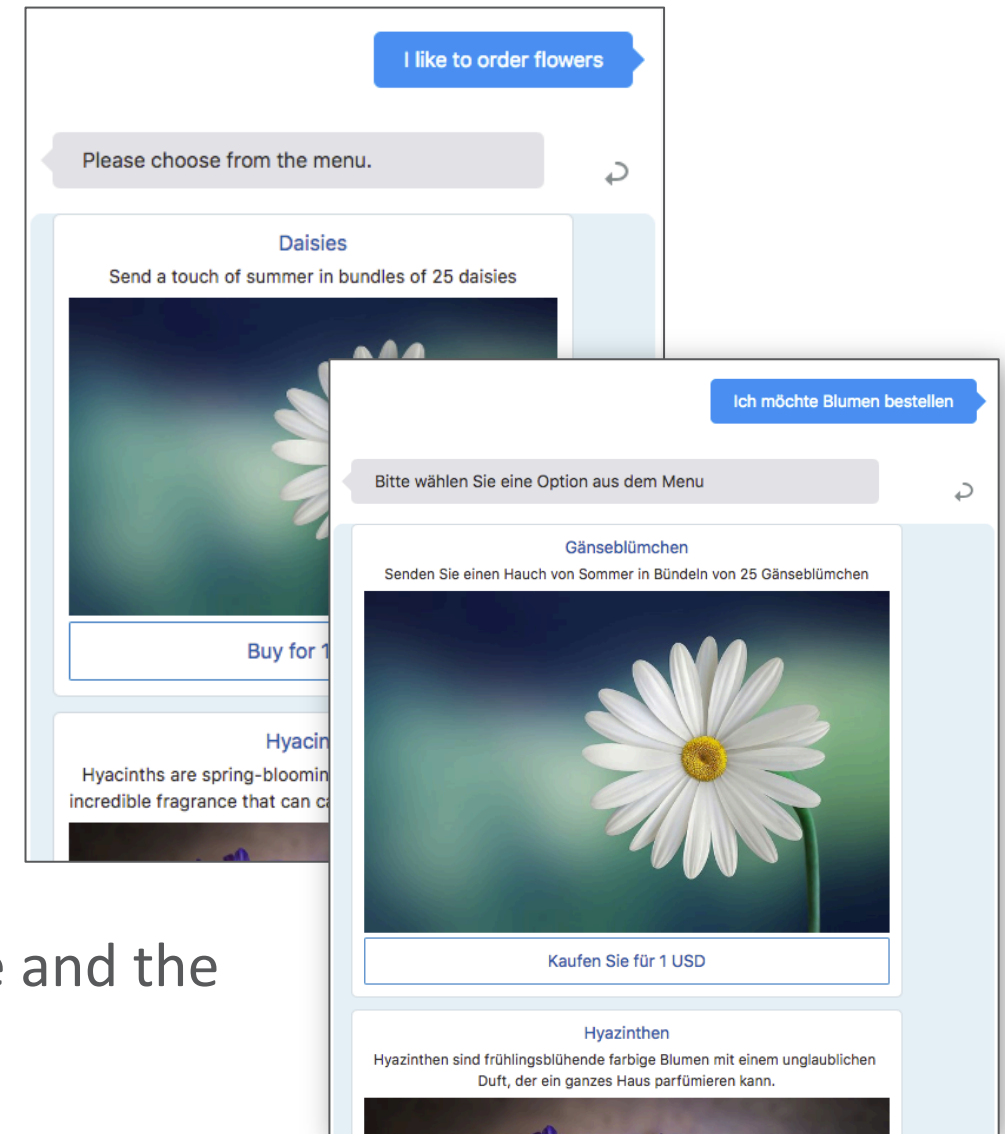
- Integrate ODA with call center
 - Digital assistant can help with call center load
 - Agents focus
 - Introduce agent as and when it makes sense
 - Escalation, high value call, complex question
- Architecture options
 - Digital assistant fronts call center
 - Digital assistant as an agent



Skills

Multi language support

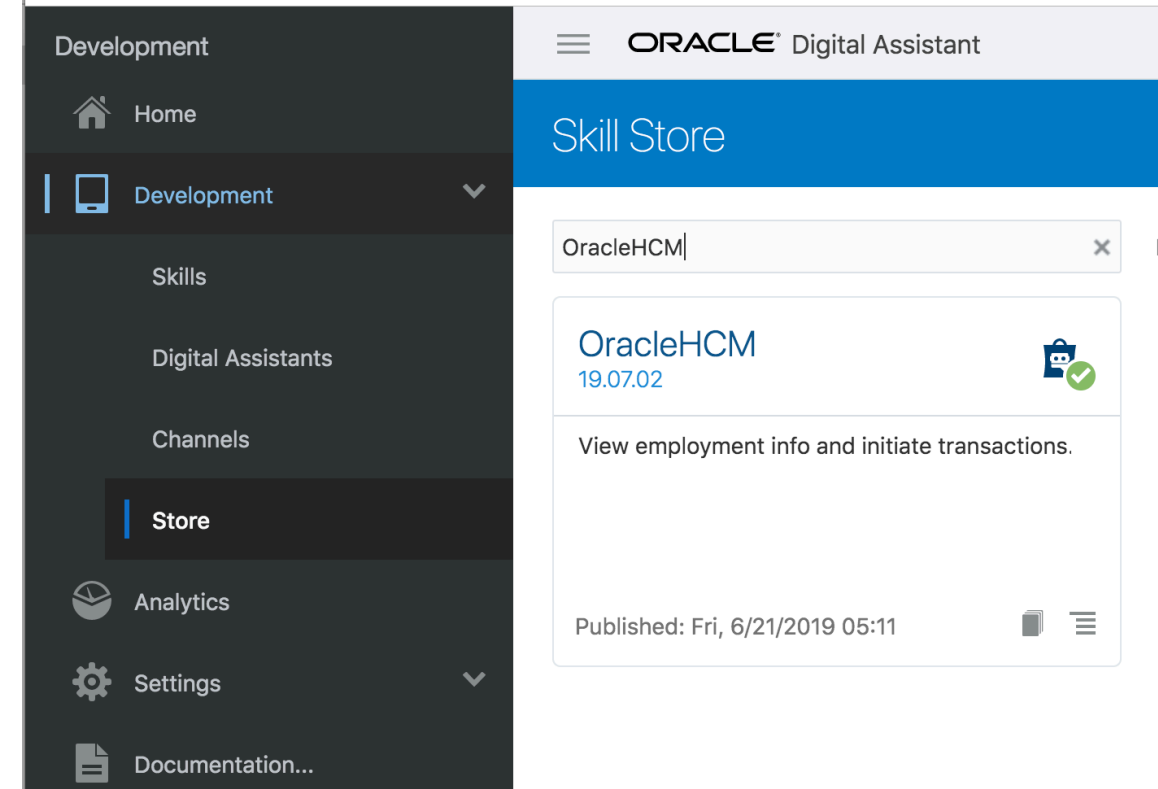
- One bot that supports multiple languages
 - Detect user language
 - Understand user language
 - Display messages in user language
- Support in skills
 - Build bot in English
 - Uses Translation service for other languages
 - Resource bundles allow you to control language and the bot's voice



Skills

Extending SaaS skills

- Oracle SaaS teams are developing skills
- Allows SaaS customers to:
 - Take advantage of Oracle Digital Assistant
 - Extend factory-built skills in order to adjust them to specific features, processes, terminology, culture, etc



Skills

Adding voice capabilities

- Ability to interact with skills in the most natural, expressive way
- Rise of voice assistants, wearables, hands free
- Specific challenges for Enterprise
 - Data security, privacy, compliance
 - Domain specific vocabulary
 - Voice should be “out of the box”
- Oracle provided SDK to add speech capabilities

Skills

Embedded tester

- Supports sensible developer workflow
 - Build – Test – Deploy
 - Conversation flow can be tested without messenger
- Displays the following information
 - Variables and their values
 - Postback actions
 - Resolved intents
 - Dialog flow states visited
 - Full bot response (JSON)

States

```
graph TD; S1((showFlowersMenu)) --> S2((setFlowerNameToOrder)); S2 --> S3((askQuantity)); S3 --> S4((ensureAtLeastOneItemOrdered)); S4 --> S5((confirmOrderAndQuantity)); S5 --> S6((askDeliveryOption));
```

Variables

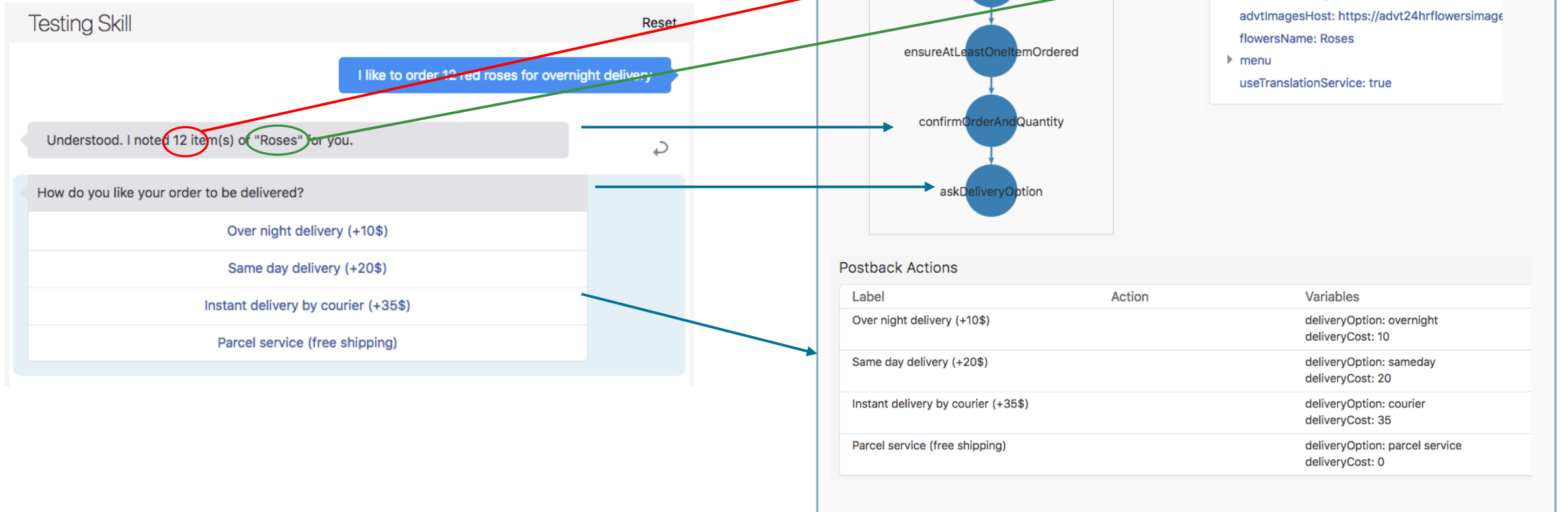
```
orderNumber: 24hrsflwrs_1541662087545
system.entityToResolve
orderQuantity
  number: 12
  entityName: NUMBER
  type: Integer
orderProductName: Roses
deliveryCostOptions
orderMenuRangeSize: 4
advtImagesHost: https://advt24hrflowersimage
flowersName: Roses
menu
useTranslationService: true
```

Postback Actions

Label	Action	Variables
Over night delivery (+10\$)		deliveryOption: overnight deliveryCost: 10
Same day delivery (+20\$)		deliveryOption: sameday deliveryCost: 20
Instant delivery by courier (+35\$)		deliveryOption: courier deliveryCost: 35
Parcel service (free shipping)		deliveryOption: parcel service deliveryCost: 0

Skills

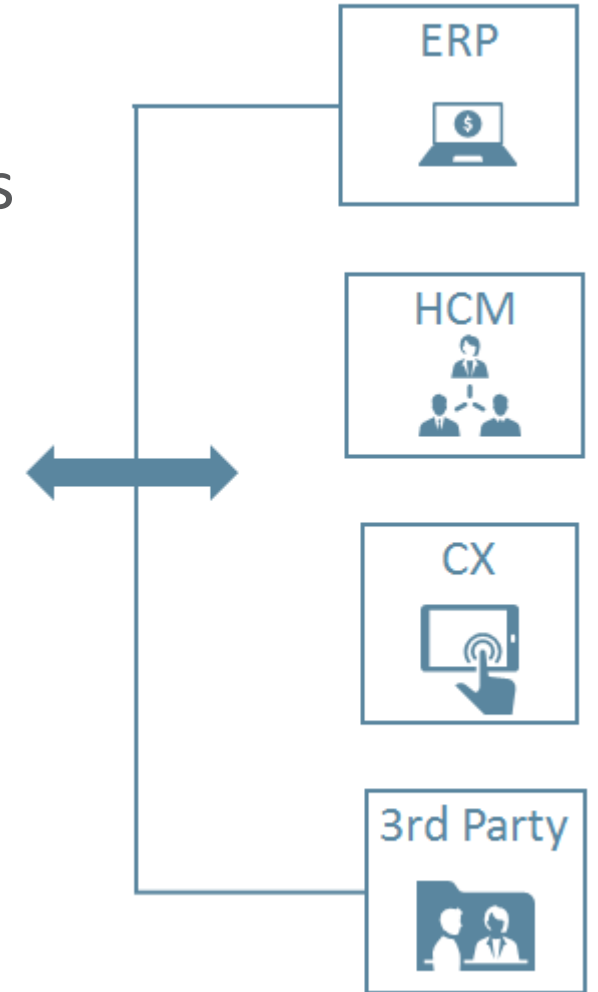
Embedded tester



Skills

Backend integration

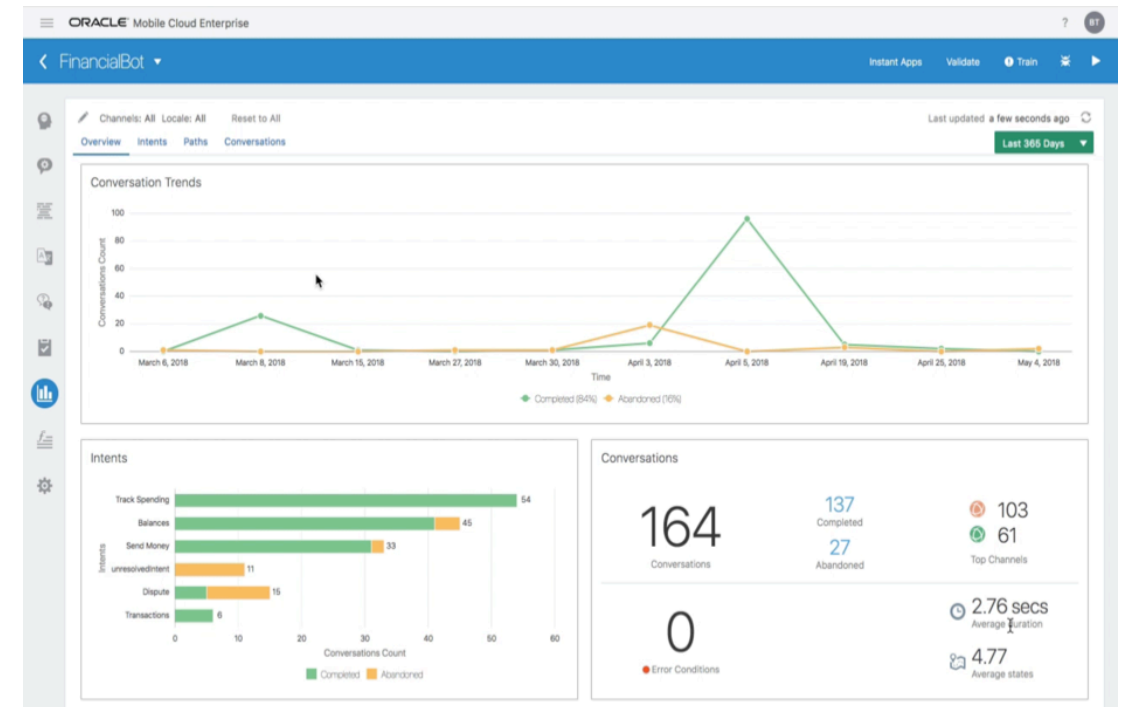
- Remote services integration through custom components
 - Component based approach
 - Integrates with data and business services
 - "Write Once Use Anywhere"
- Custom components
 - Write direct response messages
 - Save data in variables
 - Influences conversation flow



Skills

Bot insights

- Identify problems
- Developer and business oriented analytics
 - Track conversation trends, intent resolution accuracy
 - Identify most/least popular paths
 - Conversation debugger with transcripts
- Moderated self learning
 - Retrain bot through dashboard



Insights: keeping our chatbot journey on the right path



Topic agenda

- 1 About Oracle Digital assistant
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- 3 Digital Assistant**
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Digital Assistant

Adding skills

- Published skills are displayed in skill catalog
- Configured skills indicate when a new version is available
 - Update to new version keeps digital assistant level configurations

The screenshot displays the Oracle Digital Assistant interface. At the top, a sidebar contains icons for a chatbot, a skill catalog, a bar chart, and a settings gear. A green '+ Add Skill' button is positioned above a list of skills: 'RetailBot • 1.0-DA', 'PizzaBot • 1.0-DA', and 'FinancialBot • 1.0-DA'. Each skill entry includes a blue document icon with a lock and a close 'X' button. A blue arrow points from the 'Add Skill' button to the 'Skill Catalog' section below.

The 'Skill Catalog' section has a blue header with the title 'Skill Catalog' and a 'Close' button. Below the header, there is a 'Filter' search bar and a 'Sort By' dropdown menu set to 'Created Ascending'. The catalog displays three skill cards:

- CbPizzaBot 1.0-DA**: Pizza ordering skill which uses composite bag entity. Created: Wed, 1/30/2019 22:11.
- Wine Skill 1.0-DA**: A wine ordering skill. Created: Wed, 1/30/2019 22:11.
- FinancialQnABot 1.0-DA**: FinancialQnABot.

Each card includes a blue document icon with a lock and a plus icon for adding or updating. To the right of the catalog is a 'Registered Skills' list:

- RetailBot • 1.0-DA
- PizzaBot • 1.0-DA
- FinancialBot • 1.0-DA

Each item in the 'Registered Skills' list has a close 'X' button.

Digital Assistant

Skill configuration

- Invocation name
 - Used with explicit routing
 - Inherited from skill
 - customizable
- Example utterances
 - Provide hints of how to invoke skill
 - Displayed when help system intent is invoked

+ Add Skill

RetailBot • 1.0-DA	×
PizzaBot • 1.0-DA	×
FinancialBot • 1.0-DA	×

Interaction Model

? Invocation

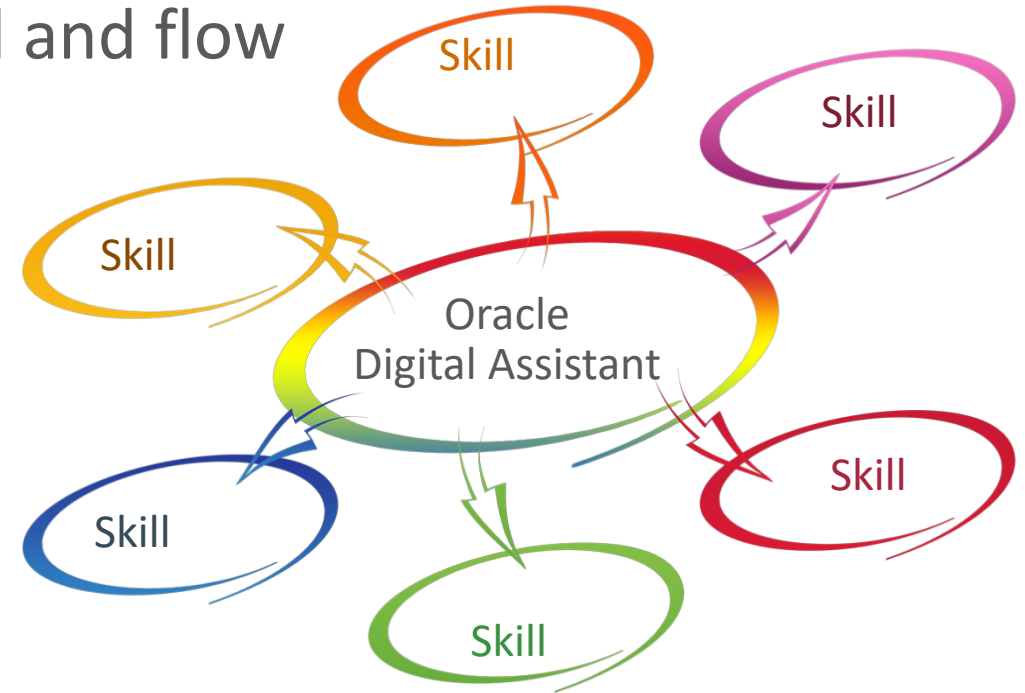
* Example Utterances Ascending ▼

ask fin skill to check my balance
go to fin skill
send money using fin skill

Digital Assistant





Intelligent routing

- Requests are routed to best-fit skill model and flow
- Disambiguates if needed
- Implicit invocation
 - Uses intents and utterances of skills
- Explicit invocation
 - Named reference for skills is used
 - 'Ask AMCE bank, what is my balance?'
- Configurable



Digital Assistant

Routing configuration options



GeneralConfigurationsEvents

Routing Parameters

Built-In System Intent Confidence Threshold

0.6

▼▲

Threshold for identifying built-in system intents, like help and exit. (Minimum value 0, maximum value 1)

Candidate Skills Confidence Threshold

0.4

▼▲

The minimum confidence score required to a match a candidate skill. (Minimum value 0, maximum value 1)

Confidence Win Margin

0.1

▼▲

Used to help determine which candidate skills and candidate built-in system intents are matched with user input. Only the top candidate that exceeds the confidence threshold is matched if its confidence score exceeds that of other candidates by this value or more. If other candidates that exceed the confidence threshold have scores that are within that of the top candidate by less than the win margin, these candidates are also matched. (Minimum value 0, maximum value 1)

Consider All Threshold

0.8

▼▲

Threshold above which a candidate intent or flow will match, regardless of the win margin and whether there are higher scoring candidates. (Minimum value 0, maximum value 1)

Consider Only Current Context Threshold

0.8

▼▲

If the confidence score for an intent in the current context exceeds this threshold, matches from other intent resolution models are not considered. (Minimum value 0, maximum value 1)

Explicit Invocation Confidence Threshold

0.8

▼▲

Confidence threshold that an utterance has to reach to be considered an explicit invocation. (Minimum value 0, maximum value 1)

Skill Name For Processing Message With Image Only

Name of the skill that will handle a new flow (not non sequitur) when we get a message that contains only an image

Skill Start State For Processing Message With Image Only

Name of the state in a skill which a new flow (not non sequitur) will start at when we get a message that contains only an image

Digital Assistant

Embedded routing tester

- Menu icon in left side menu bar
- Shows conversation information
 - Post back actions and variable settings
 - Context and system variable states
- Routing
 - Shows decision process for which skills to launch
- JSON
 - Shows returned bot payload



The screenshot displays the 'ODA_Pizza_Financial_Retail Tester' interface. The top bar is blue with the title 'ODA_Pizza_Financial_Retail Tester' and a 'Close' button. Below the title bar, there are three tabs: 'Conversation' (selected), 'Routing', and 'JSON'. The 'Conversation' tab shows a 'Testing Digital Assistant' section with a 'Reset' button. A blue bubble contains the text 'What is my balance'. Below it, a light blue box contains the text 'Do you want to go to:' followed by two options: 'GiftCardBalance in Lululemon' and 'Balances in Wells Fargo'. To the right, the 'Postback Actions' section shows a table with columns 'Label', 'Action', and 'Variables'. The table has two rows: 'GiftCardBalance in Lu...' and 'Balances in Wells Fargo'. Below this, the 'Variables' section shows a 'system' variable with a 'View All' link. At the bottom, there is a text input field with 'What is my balance' and a 'Send' button.

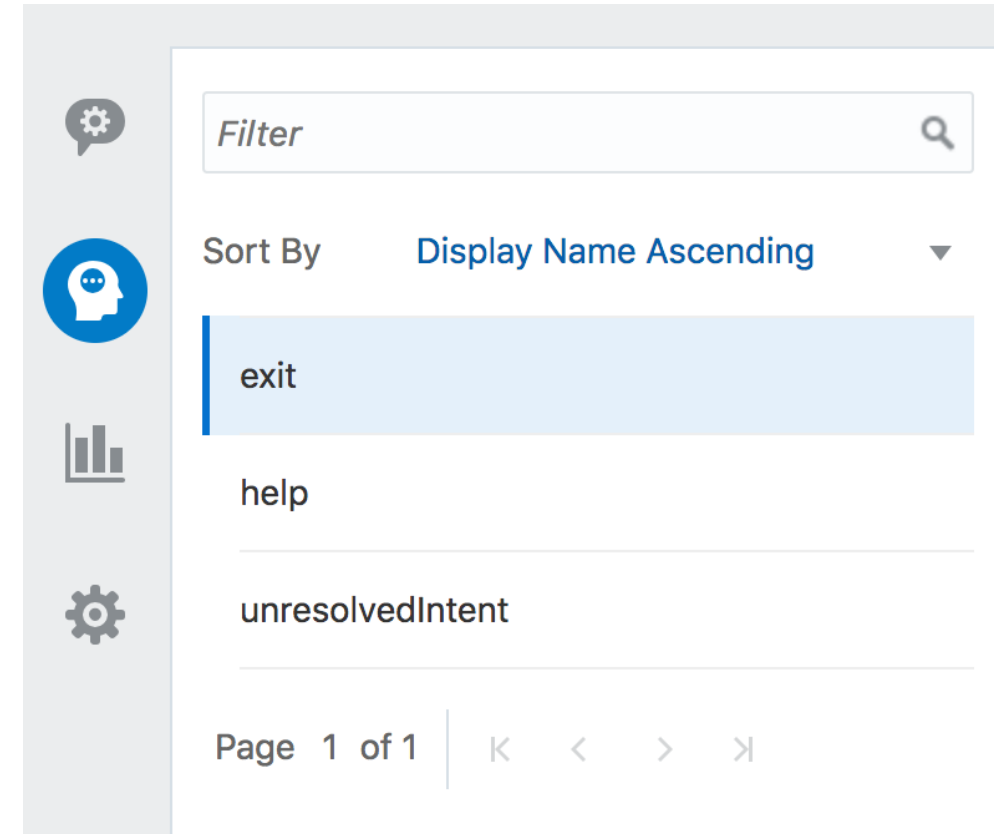
Label	Action	Variables
GiftCardBalance in Lu...		
Balances in Wells Fargo		

Variables
system

Digital Assistant

System intents

- Pre-defined intents
 - Exit
 - Help
- unresolvedIntent
 - Disambiguates help and exit intent resolution
- Utterances for help, exit and unresolvedIntent intents can be customized



Digital Assistant

Smart dialog

- System dialogs
- Helps to disambiguate user requests
 - Displays the name of skill candidates
 - User selects skill to go with
- Handles non-sequitur requests
 - If a user message does not match an intent in the current skill
 - If user provided value is invalid for a state
 - Suspends and resumes current flow

send money

From which account do you want to make a payment?

savings

checking

credit card

what is my balance

Do you want to switch to Balances in Wells Fargo now?

Yes

No

Yes

For which account do you want your balance?

savings

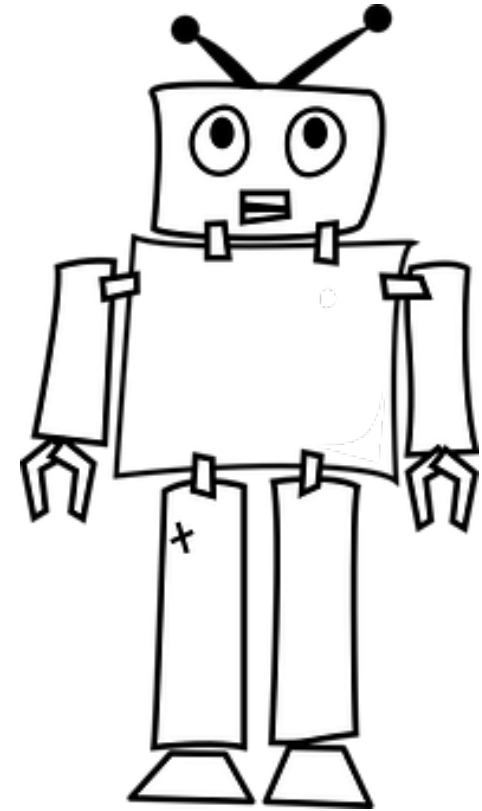
checking

credit card

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Channels connect skills and digital assistants to messenger clients



About channels

- Declaratively created in Oracle Digital Assistant
- "Native" channel support provides configuration for specific messengers
 - Ensures message payloads are defined as needed by channel
 - Provides and handles message server interactions
- Webhook channel
 - Allows messengers with no native channel support to interact with ODA or skill
 - Message payload is MessageModel format
 - Custom message server needed to dispatch between messenger and bot

Channel creation steps

The image illustrates the steps for creating a channel in the Oracle Cloud interface. On the left, a sidebar menu shows the navigation path: **Development** > **Channels**. A green button labeled **+ Channel** is shown above the **Create Channel** dialog box.

The **Create Channel** dialog box contains the following fields:

- * Name:** twenty4hoursflowersWeb
- Description:** Optional short description for this channel
- Channel Type:** Facebook Messenger (selected from a dropdown menu)
- * Page Access Token:** Facebook Messenger, Webhook, Web, iOS, Android, Twilio SMS, WeChat
- * App Secret:**
- Session Expiration (minutes):**

A green **Create** button is located at the bottom right of the dialog.

An arrow points from the **Create Channel** dialog to the **Route To** dropdown menu. The dropdown menu is titled **Select skill or digital assistant to route messages to** and shows a list of options:

- Stock Quotes and Transactions
- TelcoBot 1.0 (Telecom Provider Virtual Assistant)
- Travel 1.0 (This is the Travel Bot)
- Twenty4HoursFlowers 1.0

The **Twenty4HoursFlowers 1.0** option is currently selected.

Integrated Cloud

Applications & Platform Services

ORACLE®