

**ORACLE®**

# Oracle Digital Assistant

## The Complete Training

### Dialog Flow



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# Safe Harbor Statement

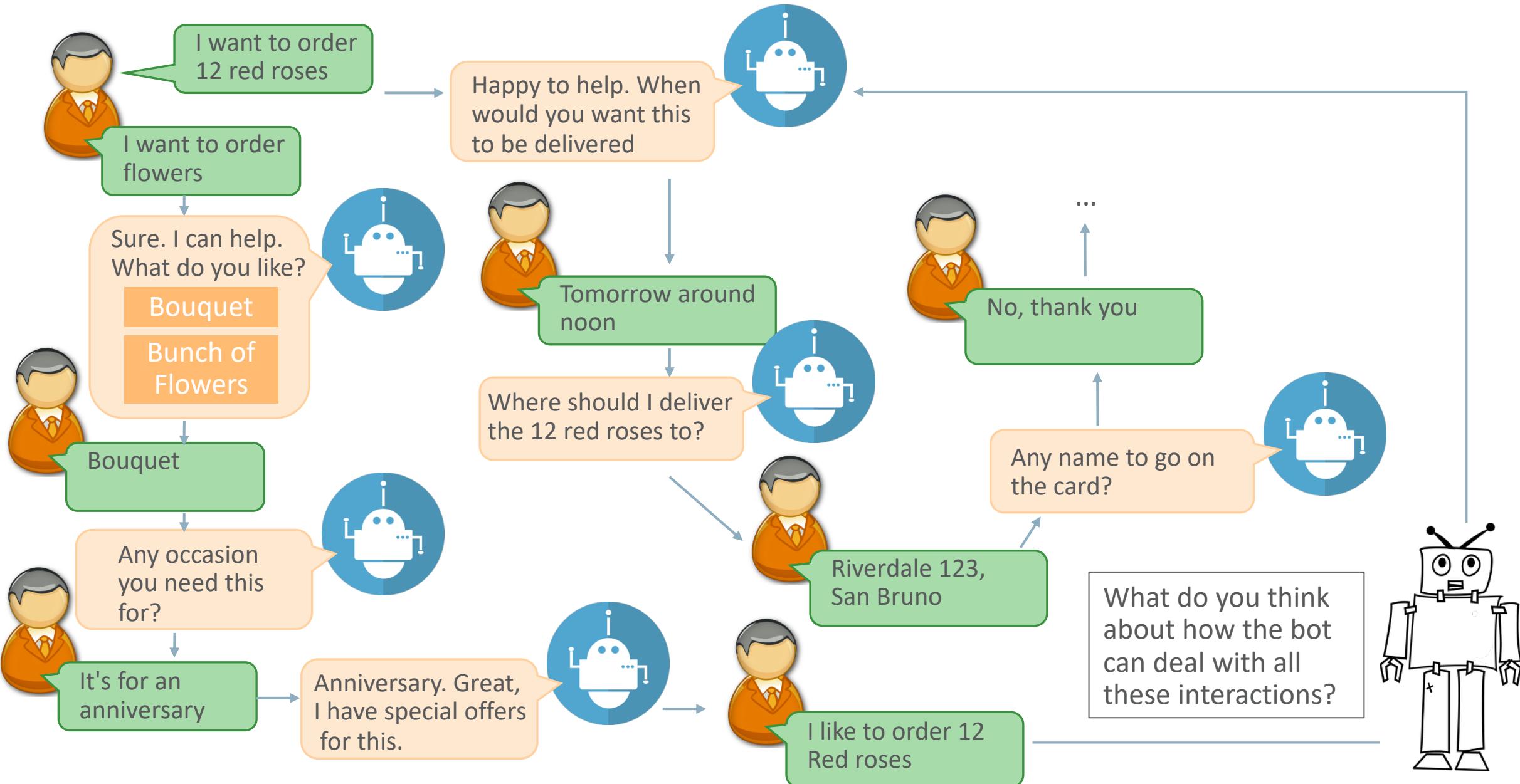
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# Topic agenda

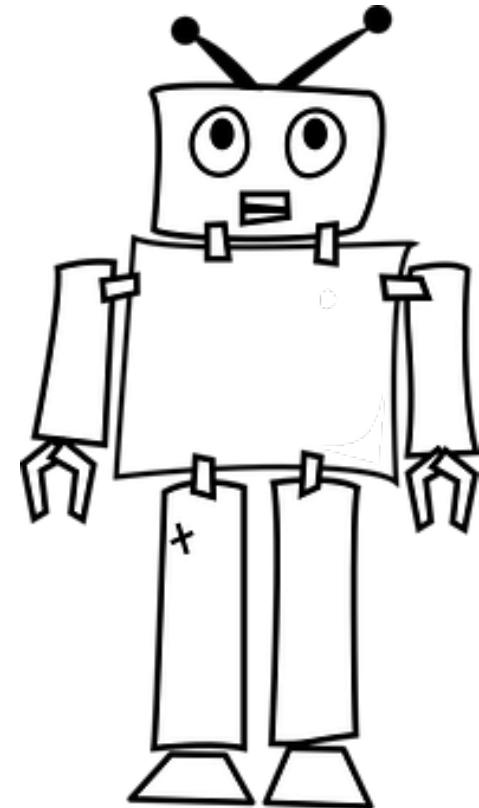
- 1 ➤ Conversation flow
- 2 ➤ Dialog flow
- 3 ➤ Variables
- 4 ➤ Components
- 5 ➤ Navigation
- 6 ➤ Embedded conversation tester

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**Conversation flows** are similar to screen flows in web and mobile applications in that they **define the interaction between a bot and a user** for a specific task



# Oracle Digital Assistant dialog flow builder

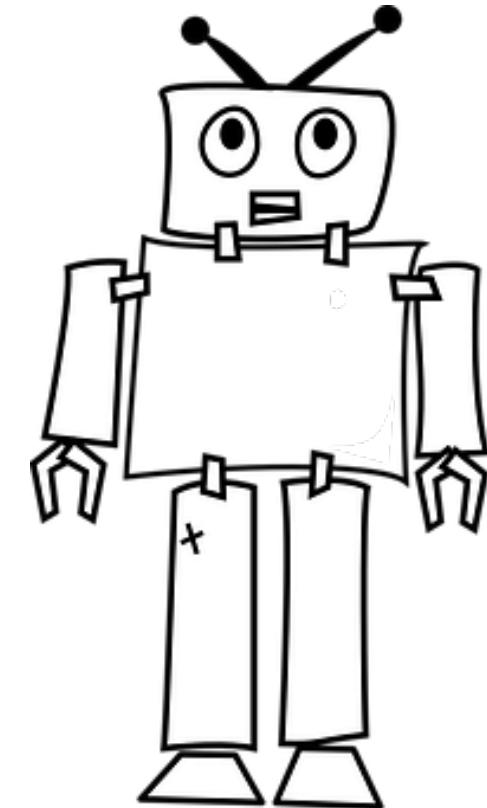
- Conversation is design as a series of states
- Conversation flows from top to bottom by default
- Each state does one thing
  - Get user input, set variable, output, resolve entities, branch etc.
  - Each of which is implemented by a "component"
- Some components automatically take care of complex conversation logic
  - Composite bag entities
- Markup is called Oracle Bot ML (OBotML)

```
startOrderPizza:  
  component: "System.Output"  
  properties:  
    text: "ok lets get that order sorted"  
    keepTurn: true  
  transitions: {}  
  
resolveEntities:  
  component: "System.ResolveEntities"  
  properties:  
    variable: "pizza"  
    nlpResultVariable: "iResult"  
    maxPrompts: 3  
    cancelPolicy: "immediate"  
  transitions:  
    actions:  
      cancel: "maxError"  
      next: "setPizzaDough"  
  
setPizzaDough:  
  component: "System.SetVariable"  
  properties:  
    variable: "pizza.PizzaDough"  
    value: "regular"
```

# Topic agenda

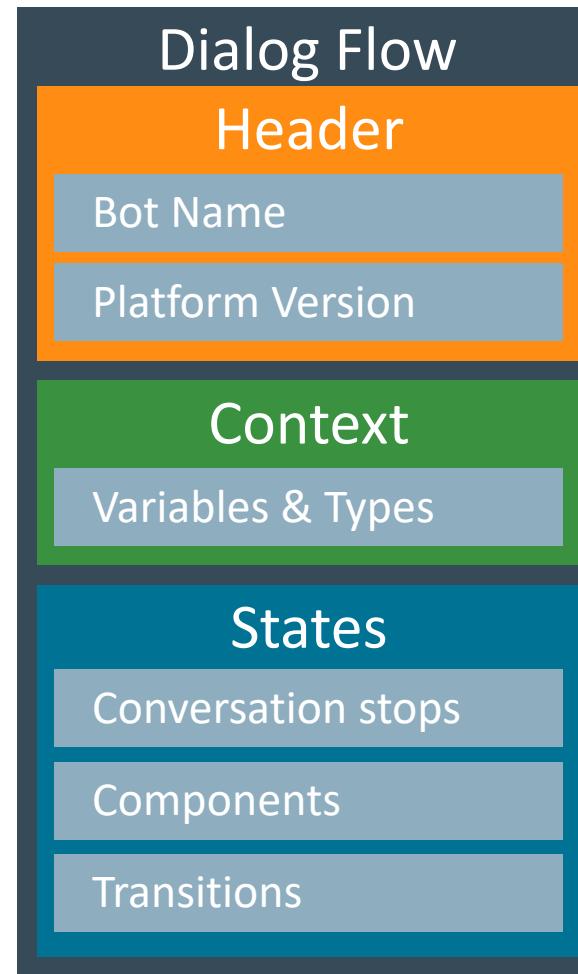
- 1 ➤ Conversation flow
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This training session teaches **dialog flow fundamentals** using the dialog flow builder and OBotML.



# Dialog flow builder

- Three sections
  - Header, Context, States
- You can define variables
- Each state implemented by a component
  - Executes logic
  - Receives user input
  - Returns bot responses
  - Determines navigation



```
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: {}
```

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# Context variables

- Hold information for the duration of a conversation
  - Variables can explicitly be reset
  - Automatically reset when conversation starts over
- Valid types
  - string, boolean, int, float, double
  - resourcebundle
  - nlprestult, entity
  - Arrays are created from variables of type string
- Accessible through expression
  - \${variable\_name.value}

```
context:  
variables:  
  name: "string"  
  age: "int"  
  rb: "resourcebundle"  
  departureDate: "DATE"  
  mailAddress: "MAIL"  
  destination: "AirportCodes"  
  iResult: "nlprestult"  
  
printBookingConfirmation:  
  component: "System.Output"  
  properties:  
    text: "Hello, ${name.value}.  
          Your flight to ${destination.value}  
          on ${departureDate.value.date} is  
          confirmed."  
  transitions:  
    return: "done"
```

# User variables

- Defined at runtime using a name prefix of "user. "
- Saved in digital assistant database
  - Variable persisted beyond a single conversation

```
#creating/setting user scope variable
setUserScopeVariableForLanguage:
  component: "System.SetVariable"
  properties:
    variable: "user.preferredLanguage"
    value: "${profile.languageTag}"
```

```
#reading user scope variable
printPreferredLanguage:
  component: "System.Output"
  properties:
    text: "User preferred language code set to ${user.preferredLanguage}"
```

# Profile variables

- Set by messenger client
  - Content depends on messenger client
  - E.g. firstName, lastName, locale, timezoneOffset

```
#read and print profile variable content
welcomeStatement:
  component: "System.Output"
  properties:
    text: |-
      Welcome ${profile.firstName}, ${profile.lastName}.

      I am guiseppe the pizza bot. I am ready to take your order.

transitions:
  next: "getUserOrder"
```

# System variables

- Set by the skill
  - You don't have to specifically declare
  - Used to access useful information about the skill and how it is functioning
- **system.message**
  - Access to JSON conversation payload
    - \${system.message.channelConversation.type}
      - Access to information about the messenger channel: 'test', 'facebook' 'webhook' etc.
    - \${system.message.messagePayload.text}
      - Access to user typed input value
- **system.errorState**
  - Name of dialog flow state causing an error

# System variables

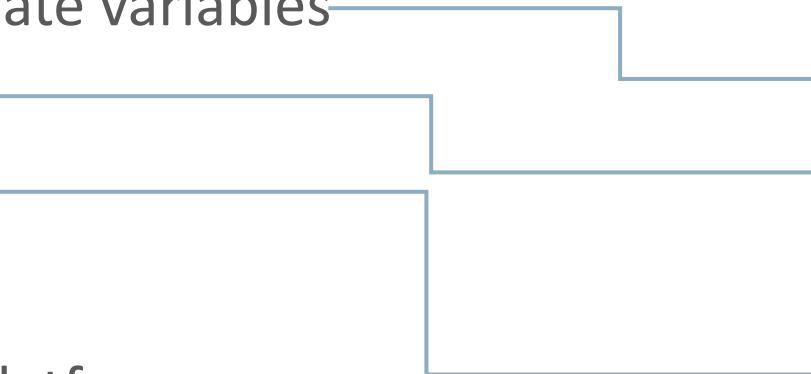
- `system.invalidUserInput`
  - Boolean flag set to true when user failed providing a valid input value
- `system.conf.<name>`
  - Access to custom skill bot configuration parameters
- `system.entityToResolve`
  - Used with composite bag entity to track the current entity to provide input for
- `system.actualState`, `system.expectedState`
  - Used in out-of-order message handling

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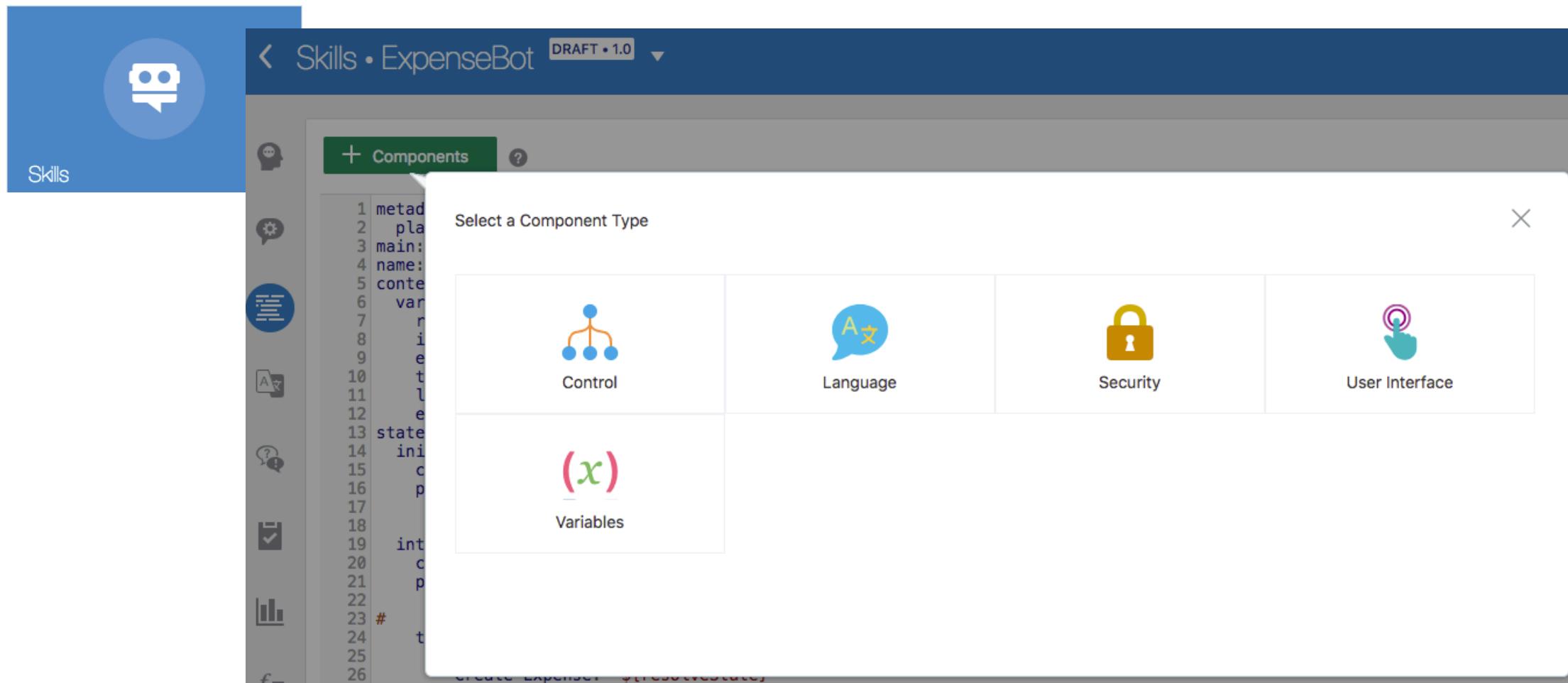
# Components

- Do the real work
  - Every state references a component
  - Input components update variables
  - May have properties
  - Defines navigation
- System components
  - Provided by the Bots platform
  - Perform standard functionality and UI rendering
- Custom Components
  - Implemented by you the developer (typically for backend integration)



```
resolveEntities:  
  component: "System.ResolveEntities"  
  properties:  
    variable: "pizza"  
    nlpResultVariable: "iResult"  
    maxPrompts: 3  
    cancelPolicy: "immediate"  
  transitions:  
    actions:  
      cancel: "maxError"  
      next: "setPizzaDough"
```

# Component templates





Control

- System.ConditionEquals
- System.ConditionExists
- System.Switch



- System.DetectLanguage
- System.Intent
- System.MatchEntity
- System.QnA
- System.TranslateInput
- System.TranslateOutput



Security

- System.OAuth2AccountLink
- System.OAuthAccountLink
- System.OAuth2ResetTokens



Variables

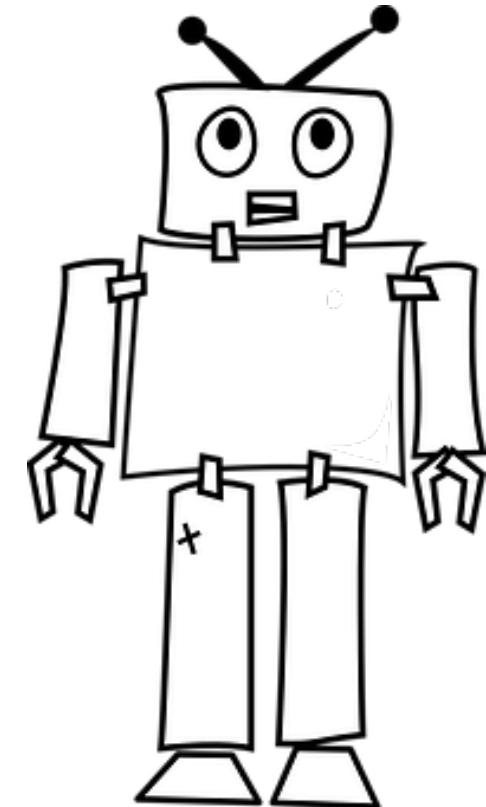
- System.SetVariable
- System.CopyVariables
- System.ResetVariables



User Interface

- System.AgentConversation
- System.AgentInitiation
- System.AgentTransfe
- System.CommonResponse
- System.List
- System.ResolveEntities
- System.Text
- System.WebView

User input **components save user input or user selection in variables**. The result from NLP processing is saved in a variable of type nlpresult.



# Components are not rendered when ...

- The input component's *variable* property points to a dialog flow variable that has a value set
- A value is set through natural language processing (entity slotting)
  - Input component *nlpResultVariable* property points to a dialog variable of type 'nlpresult'
  - Component *variable* property references dialog flow variable of an entity type
  - Entity value got extracted using NLP

```
variables:  
pizzaType: "PizzaType"  
iResult: "nlpResult"  
  
askPizzaType:  
component: "System.List"  
properties:  
prompt: "Please select a pizza type"  
options: "${pizzaType.type.enumValues}"  
variable: "pizzaType"  
nlpResultVariable: "iResult"  
transitions:  
next: "askSize"
```

Contains  
pizza type



# Entity slotting example



I like to order 12 red roses

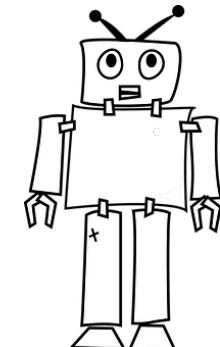
iResult.value.matchEntities['Flowers'][0]

Roses

```
bouquetName: "Bouquets"
flowersName: "Flowers"
iResult: "nlpresult"

getUserIntent:
component: "System.Intent"
properties:
variable: "iResult"
transitions:
next: "showMenu"
actions:
OrderFlowers: "startOrderFlowers"
RequestAgentSupport: "startHumanAgent"
unresolvedIntent: "resetiResult"
```

```
showFlowersMenu:
component: "System.CommonResponse"
properties:
variable: "flowersName"
nlpResultVariable: "iResult"
processUserMessage: true
translate: "${useTranslationService.value}"
metadata:
responseItems:
- type: "text"
```



Component **does**  
not render.

# Entity slotting example



I like to order flowers

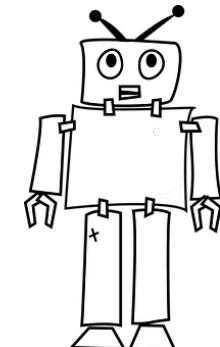
iResult.value.matchEntities['Flowers'][0]

NULL

```
bouquetName: "Bouquets"
flowersName: "Flowers"
iResult: "nlpresult"

getUserIntent:
component: "System.Intent"
properties:
variable: "iResult"
transitions:
next: "showMenu"
actions:
OrderFlowers: "startOrderFlowers"
RequestAgentSupport: "startHumanAgent"
unresolvedIntent: "resetiResult"
```

```
showFlowersMenu:
component: "System.CommonResponse"
properties:
variable: "flowersName"
nlpResultVariable: "iResult"
processUserMessage: true
translate: "${useTranslationService.value}"
metadata:
responseItems:
- type: "text"
```

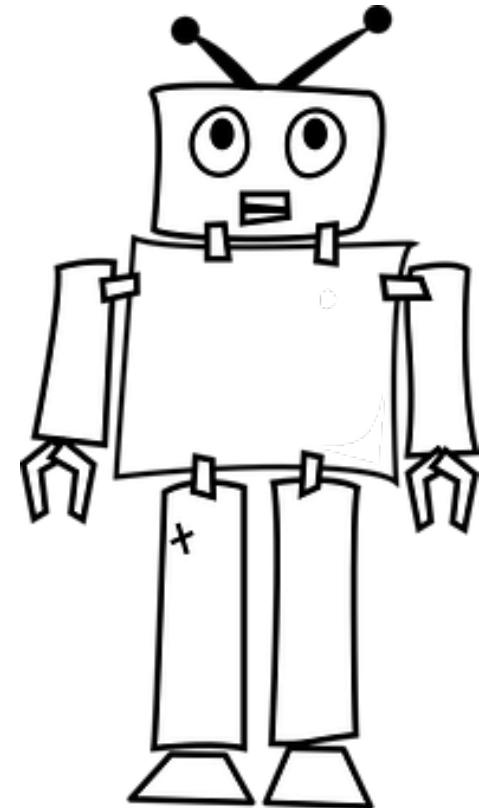


Component **does**  
render.

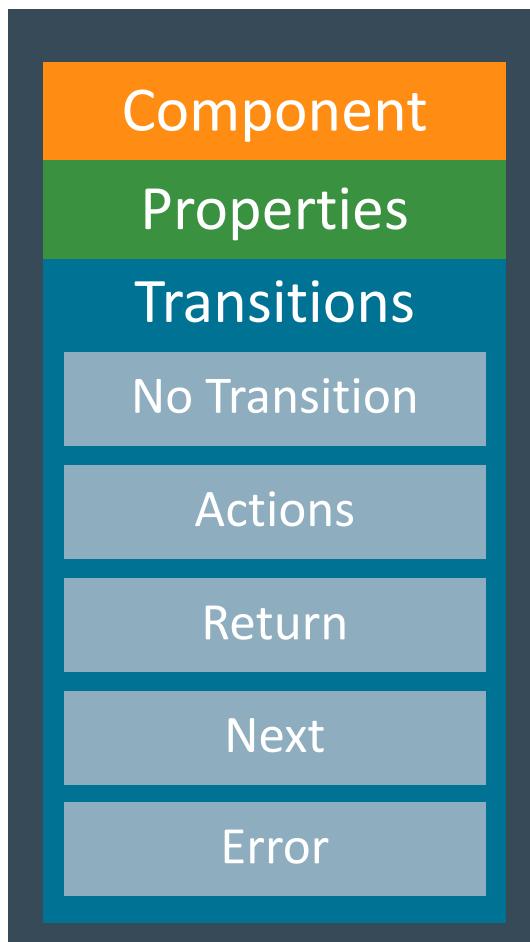
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**Navigation** in a dialog flow is through state transitions.

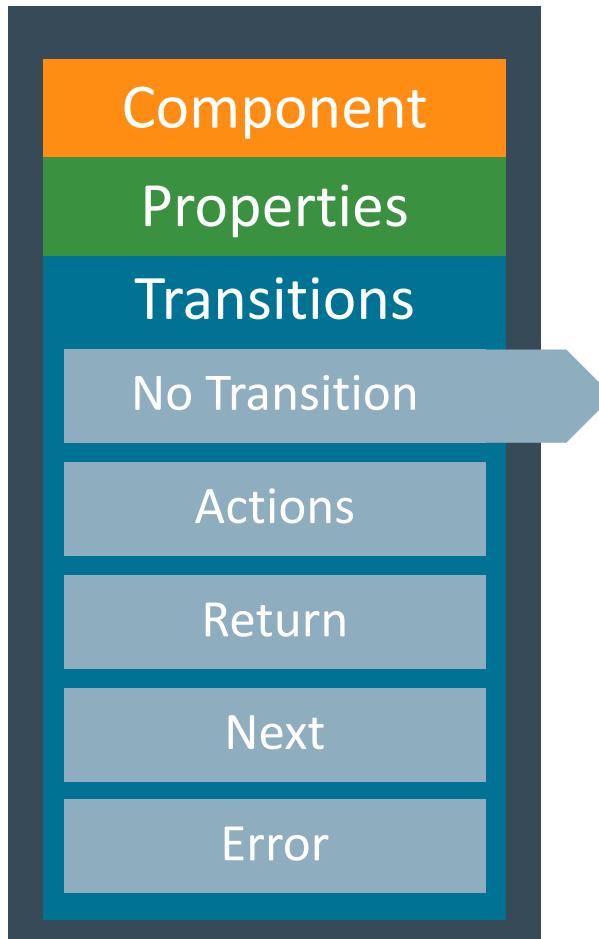


# Transitions



- Transitions are directives that conditionally direct a conversation to a logical next dialog flow state
  - Transitions can be defined locally on a state or global as a default transition
- You can define one or more transition for a state
  - At any time, only a single transition is followed
  - Local transition definitions precede global transitions
  - Action transition preceded next, error and 'no' transition
- Allow branching in the conversation flow.

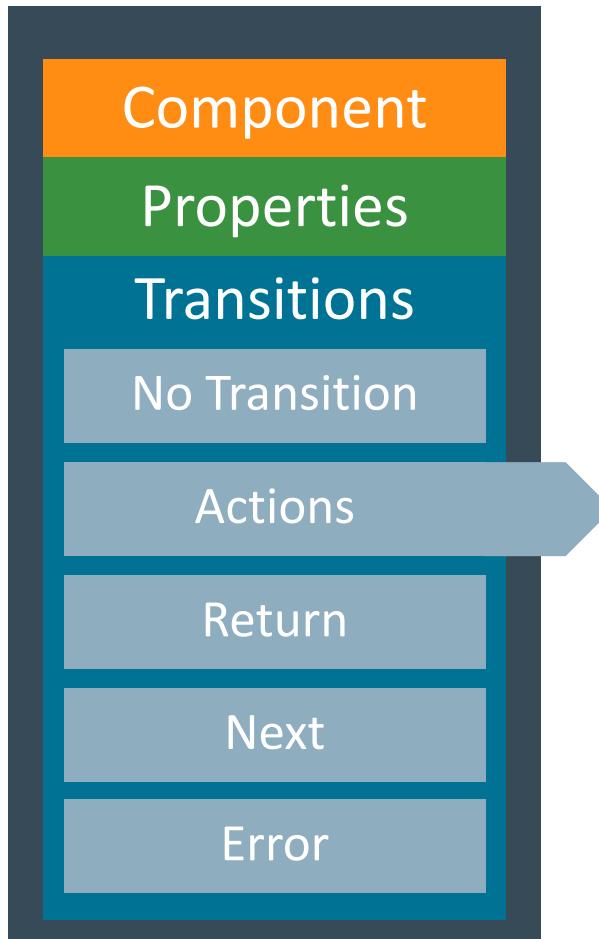
# Transitions



```
sayHello:  
  component: "System.Output"  
  properties:  
    text: " ... "  
  transitions: {}
```

- Performs default navigation
  - Top-to-bottom
  - Useful for testing and mockups

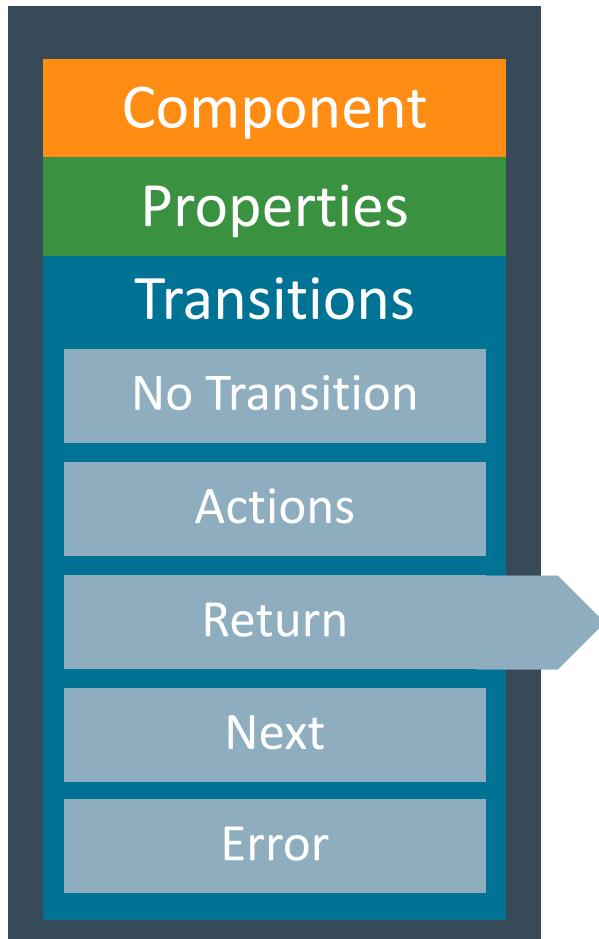
# Transitions



```
validateUserEntry:  
  component: "System.MatchEntity"  
  properties:  
    ...  
  transitions:  
    actions:  
      match: "handleValidEntry"  
      nomatch: "handleInvalidEntry"
```

- Actions are
  - Component outcome strings
  - Mapped to a state in the dialog flow by skill designer

# Transitions



```
printBalance:  
    component: "System.Output"  
    properties:  
        ...  
    transitions:  
        return: "done"
```

- Exits the flow
- Reset all flow context variables
- Entry back into flow begins back at the top state

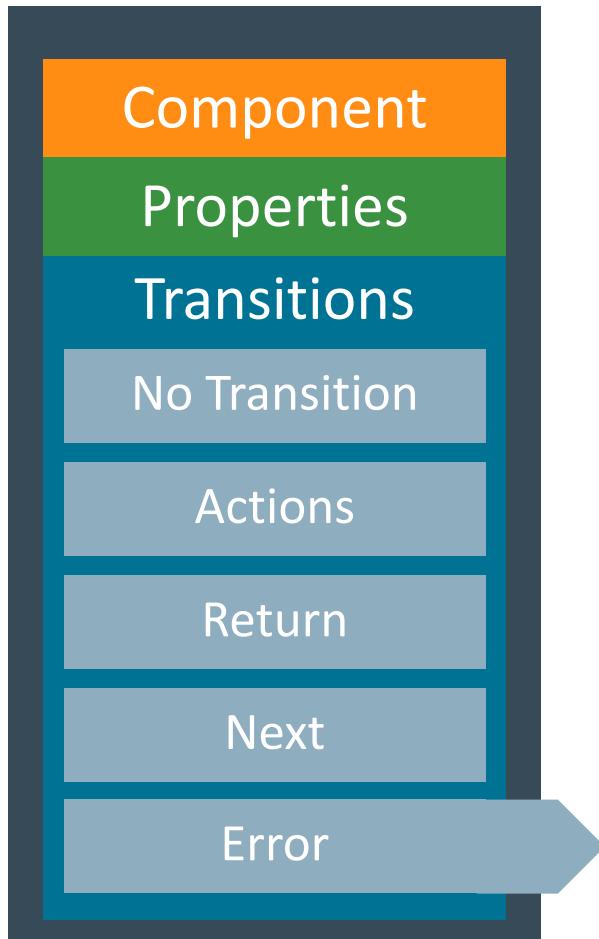
# Transitions



```
setCode:  
  component: "System.SetVariable"  
  properties:  
    ...  
  transitions:  
    next: "verifyCode"
```

- Proceeds to named state
- Recommended to use instead of "no transition"

# Transitions



```
type:  
  component: "System.Intent"  
  properties:  
    ...  
  transitions:  
    error: "handleError"
```

- If an unhandled exception occurs
  - e.g. a component exception
  - Local error handling

# Default transitions ("global" transitions)

- Defined in dialog flow context
  - Optional (but useful)
- Allows you to define default navigation for :
  - actions
  - error transition
    - No more "Oops ..." messages
  - next transition
- Used as a fallback when local state does not handle a transition type

variables:

...

**defaultTransitions:**

```
error: "globalErrorHandler"  
next: "globalNextState"  
actions:  
    textReceived: "intentState"  
    ...
```

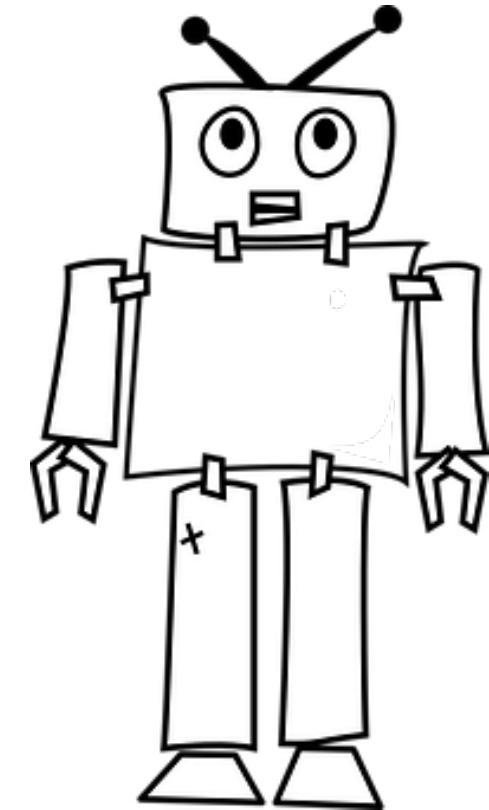
states:

...

# Topic agenda

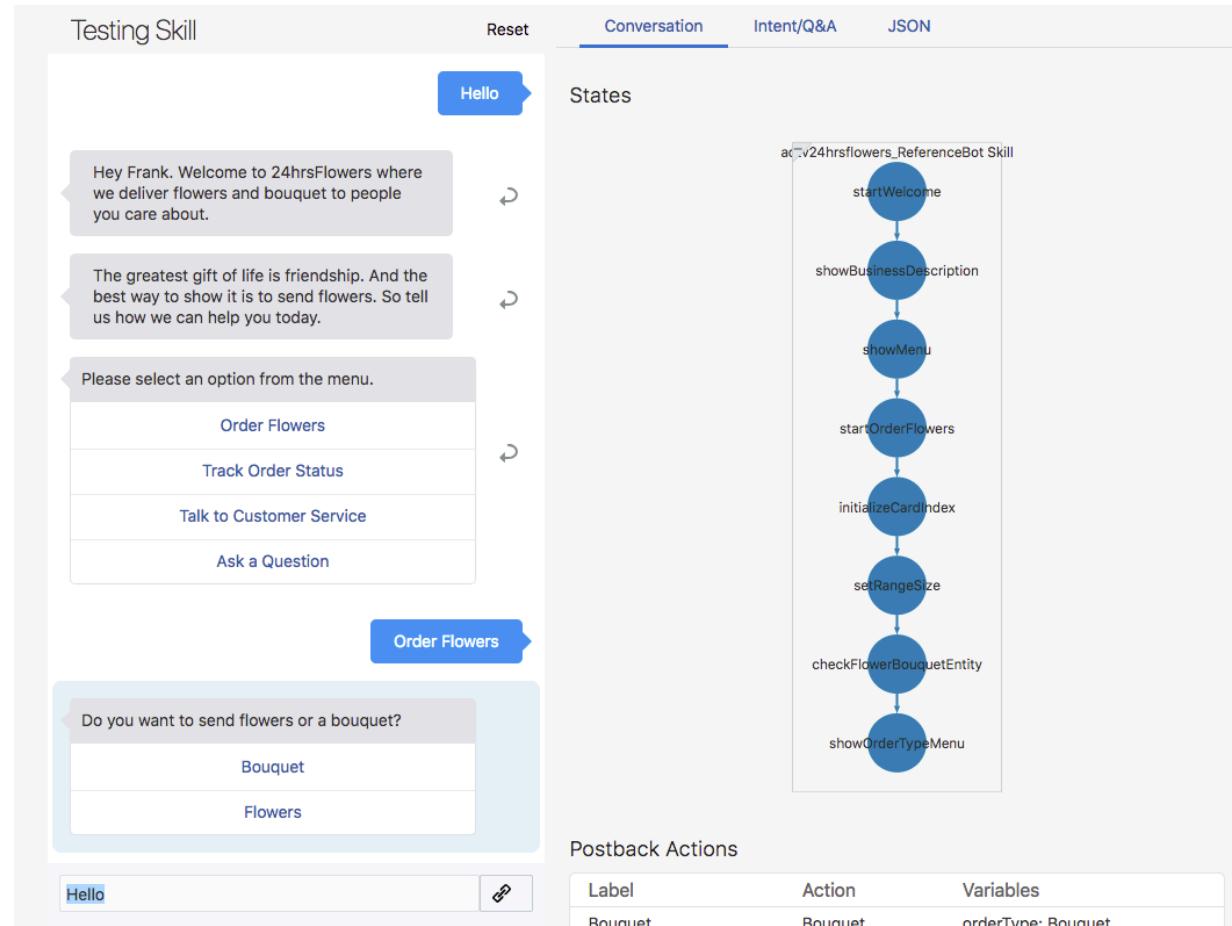
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Oracle Digital Assistant provides a **powerful embedded conversation tester** that can be used for testing and debugging conversation flows.



# Embedded tester

- Allows you to test conversation flows without deploying the bot
  - Shows current state of system and context variables
  - Supports rich bot responses
    - Images, Cards, Lists, Attachments
  - "Circles" show visited states
- Shows Intent / Q&A resolution
- JSON payload
  - Shows raw message payload exchanged between user and bot



# Integrated Cloud Applications & Platform Services

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