

ORACLE®

Oracle Digital Assistant

The Complete Training

Dialog Flow

Safe Harbor Statement

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Topic agenda

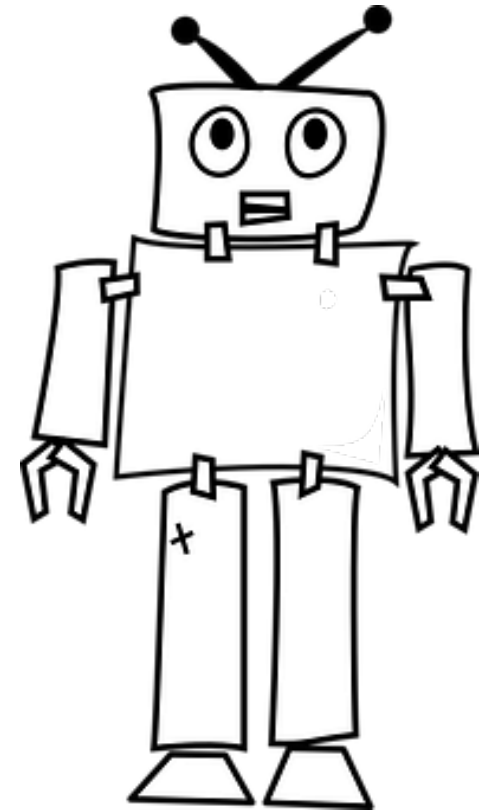
- 1 ➤ Conversation flow
- 2 ➤ Dialog flow
- 3 ➤ Variables
- 4 ➤ Components
- 5 ➤ Navigation
- 6 ➤ Embedded conversation tester

Topic agenda

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



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: {}

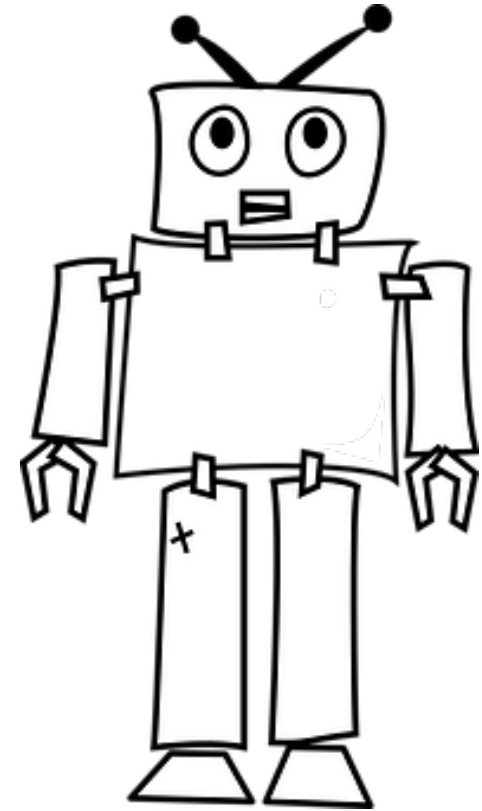
resolveEntities:
  component: "System.ResolveEntities"
  properties:
    variable: "pizza"
    nlpResultVariable: "iResult"
    maxPrompts: 3
    cancelPolicy: "immediate"
  transitions:
    actions:
      cancel: "maxError"
      next: "setPizzaDough"

setPizzaDough:
  component: "System.SetVariable"
  properties:
    variable: "pizza.PizzaDough"
    value: "regular"
```


Topic agenda

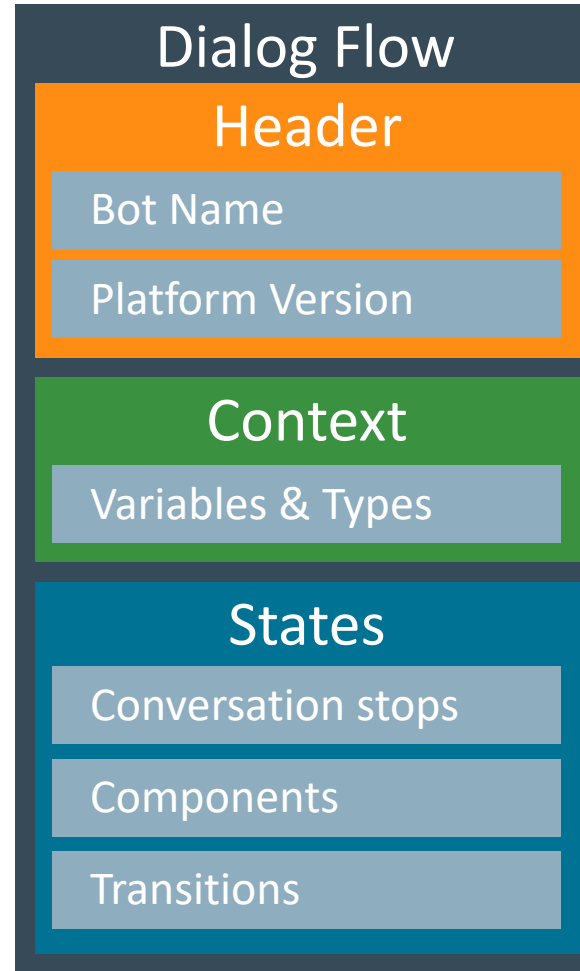
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This training session teaches **dialog flow fundamentals** using the dialog flow builder and OBotML.



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['Ac'
        transitions: {}
```

Topic agenda

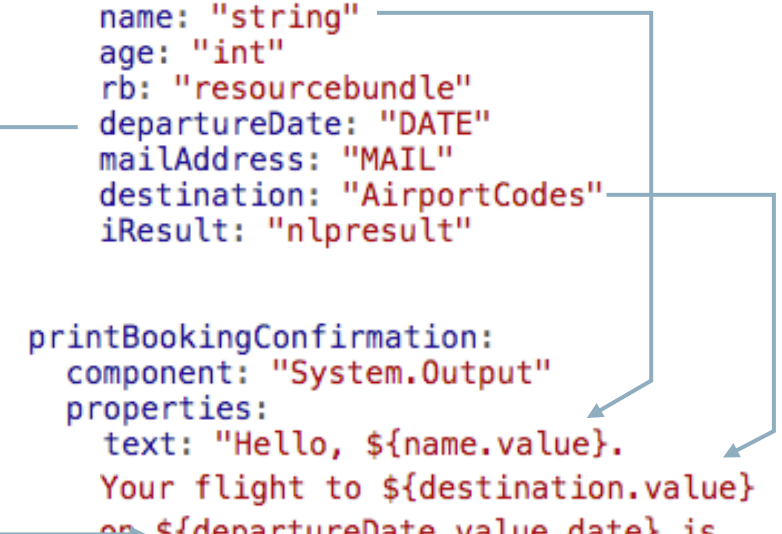
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Context variables

- 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
 - nlpresult, 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: "nlpresult"

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

Topic agenda

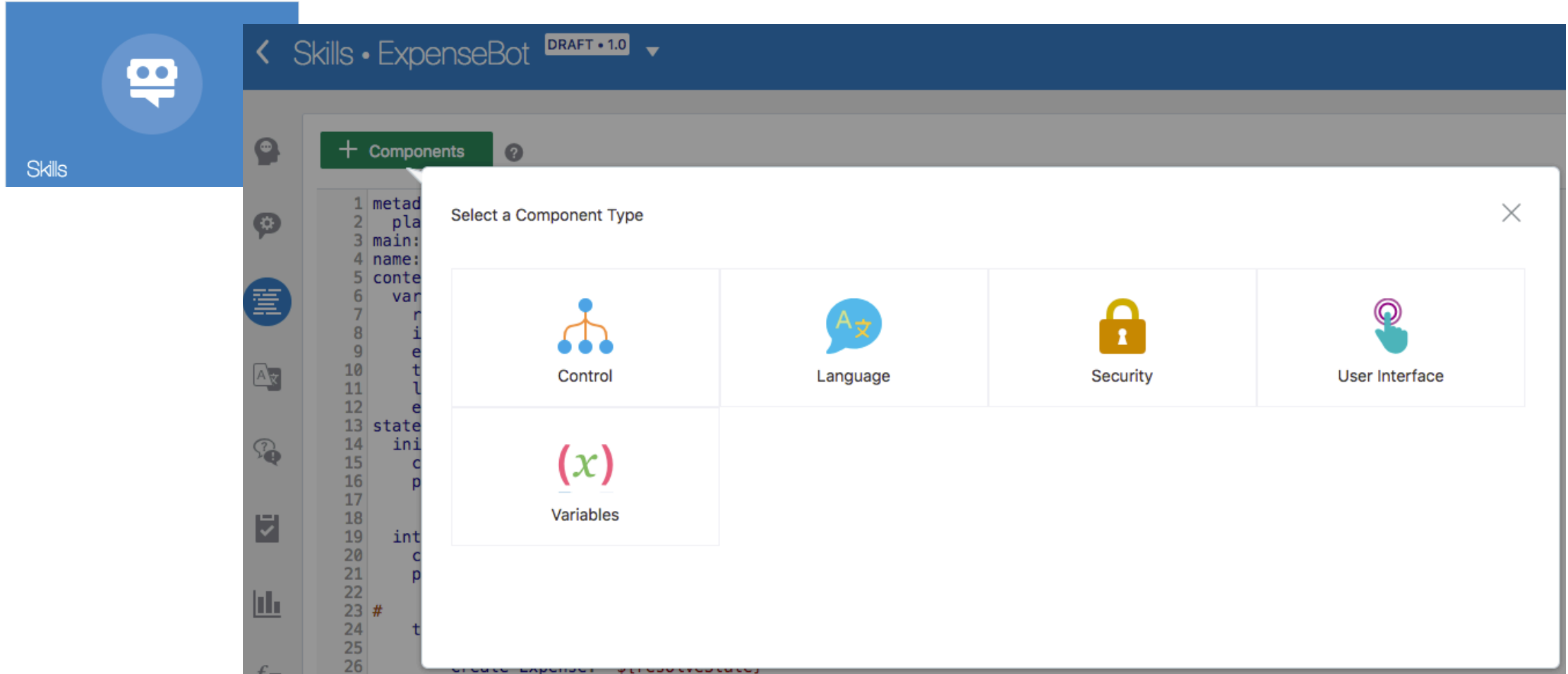
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Components

- 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

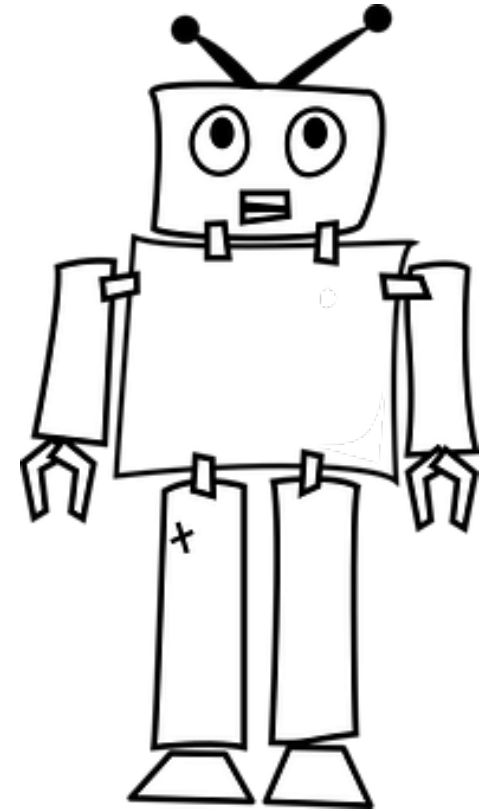
- System.SetVariable
- System.CopyVariables
- System.ResetVariables



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 nlresult.



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

I like to order a pepperoni pizza

Entity slotting example



I like to order 12 red roses

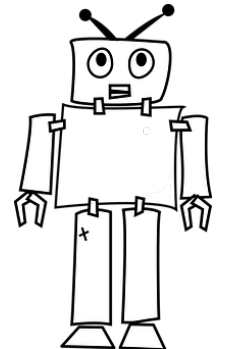
`iResult.value.matchEntities['Flowers'][0]`

Roses

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

```
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

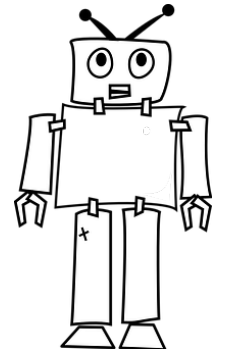
```
bouquetName: "Bouquets"  
flowersName: "Flowers"  
iResult: "nlresult"
```

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

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

NULL

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

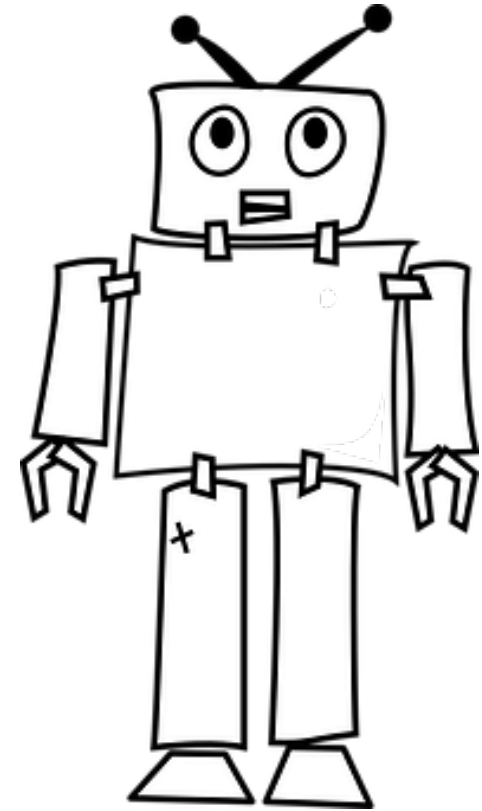


Component **does** render.

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Navigation in a dialog flow is through state transitions.

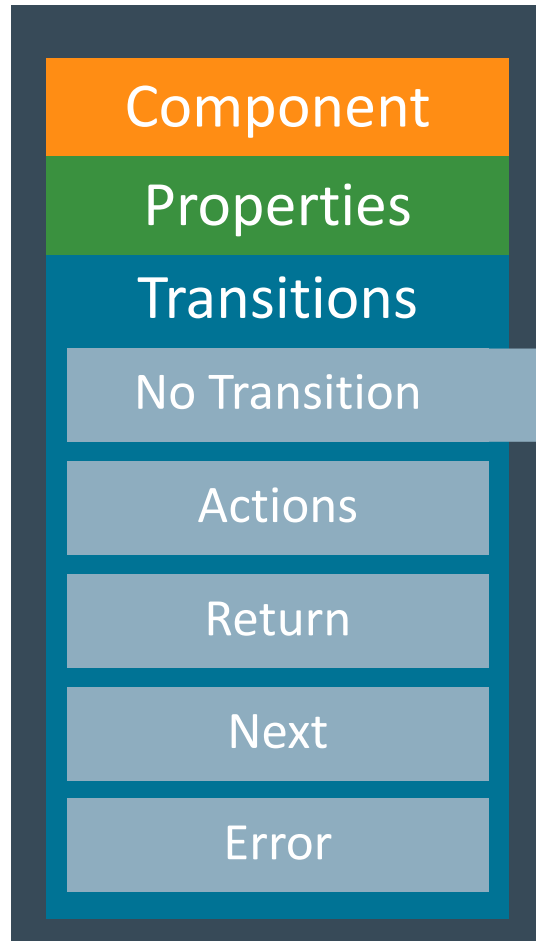


Transitions



- 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.

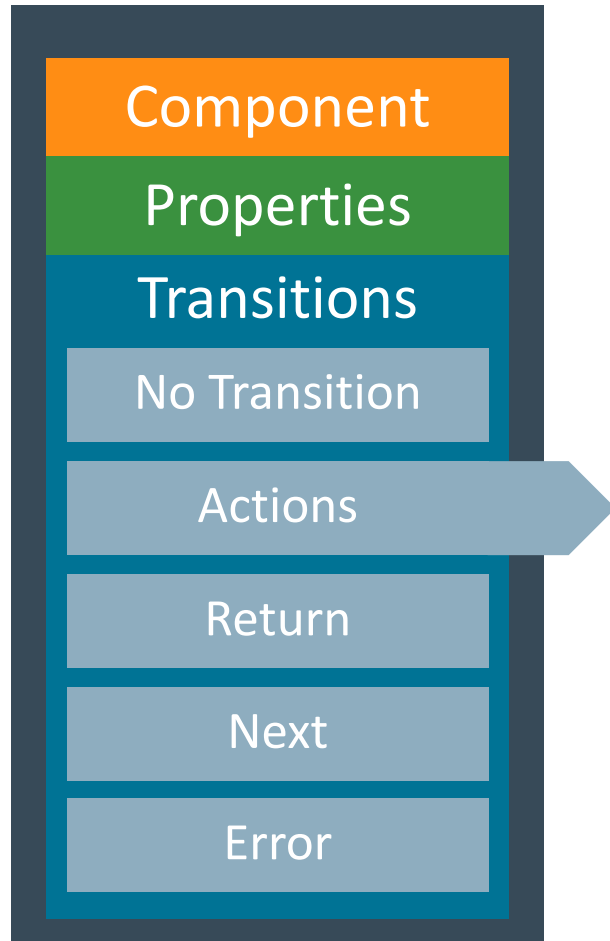
Transitions



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

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

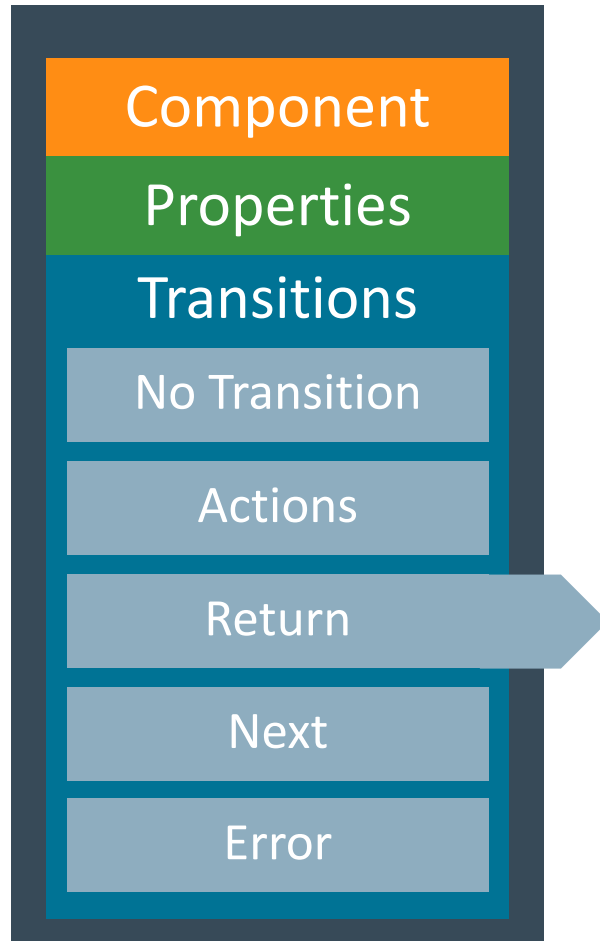
Transitions



```
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

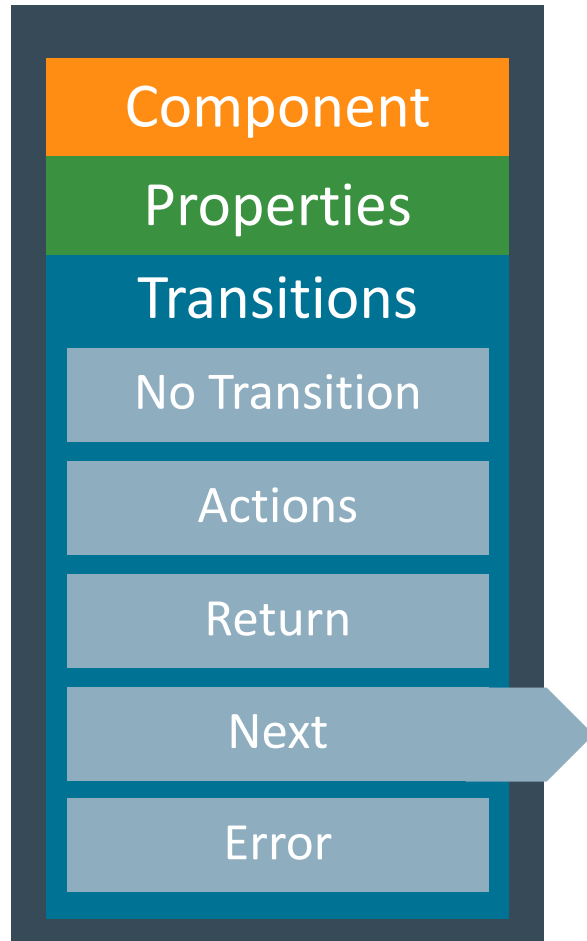
Transitions



```
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)

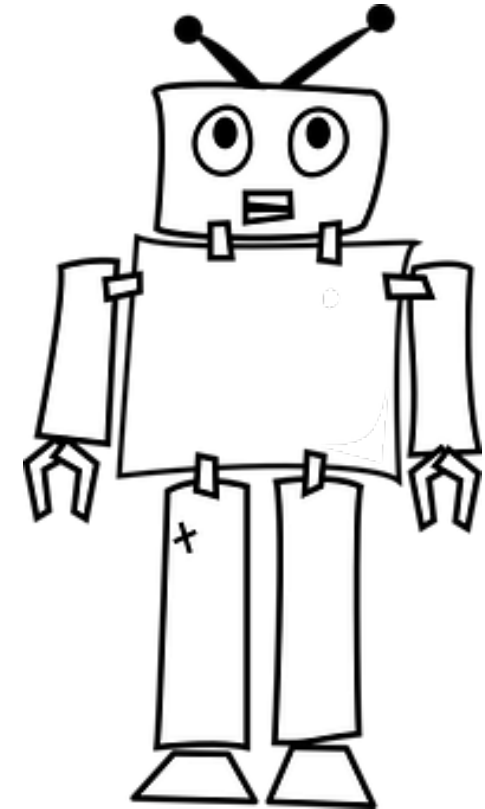
- Defined in dialog flow context
 - Optional (but useful)
- Allows you to define default navigation for :
 - actions
 - error transition
 - No more "Oops ..." messages
 - next transition
- Used as a fallback when local state does not handle a transition type

```
variables:  
  ...  
  
defaultTransitions:  
  error: "globalErrorHandler"  
  next: "globalNextState"  
  actions:  
    textReceived: "intentState"  
    ...  
  
states:  
  ...
```

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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

The screenshot displays the 'Testing Skill' interface for a bot named '24hrsFlowers'. The interface is divided into several sections:

- Conversation:** Shows a sequence of messages between a user and the bot. The user starts with 'Hello'. The bot responds with a welcome message. The user then says 'Order Flowers', and the bot shows a menu with options: 'Order Flowers', 'Track Order Status', 'Talk to Customer Service', and 'Ask a Question'. The user selects 'Order Flowers', and the bot asks 'Do you want to send flowers or a bouquet?' with options 'Bouquet' and 'Flowers'.
- States:** A vertical flow diagram showing the sequence of states in the conversation. The states are: startWelcome, showBusinessDescription, showMenu, startOrderFlowers, initializeCardIndex, setRangeSize, checkFlowerBouquetEntity, and showOrderTypeMenu.
- Postback Actions:** A table showing the actions and variables for the 'Bouquet' selection.

Label	Action	Variables
Bouquet	Bouquet	orderType: Bouquet

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