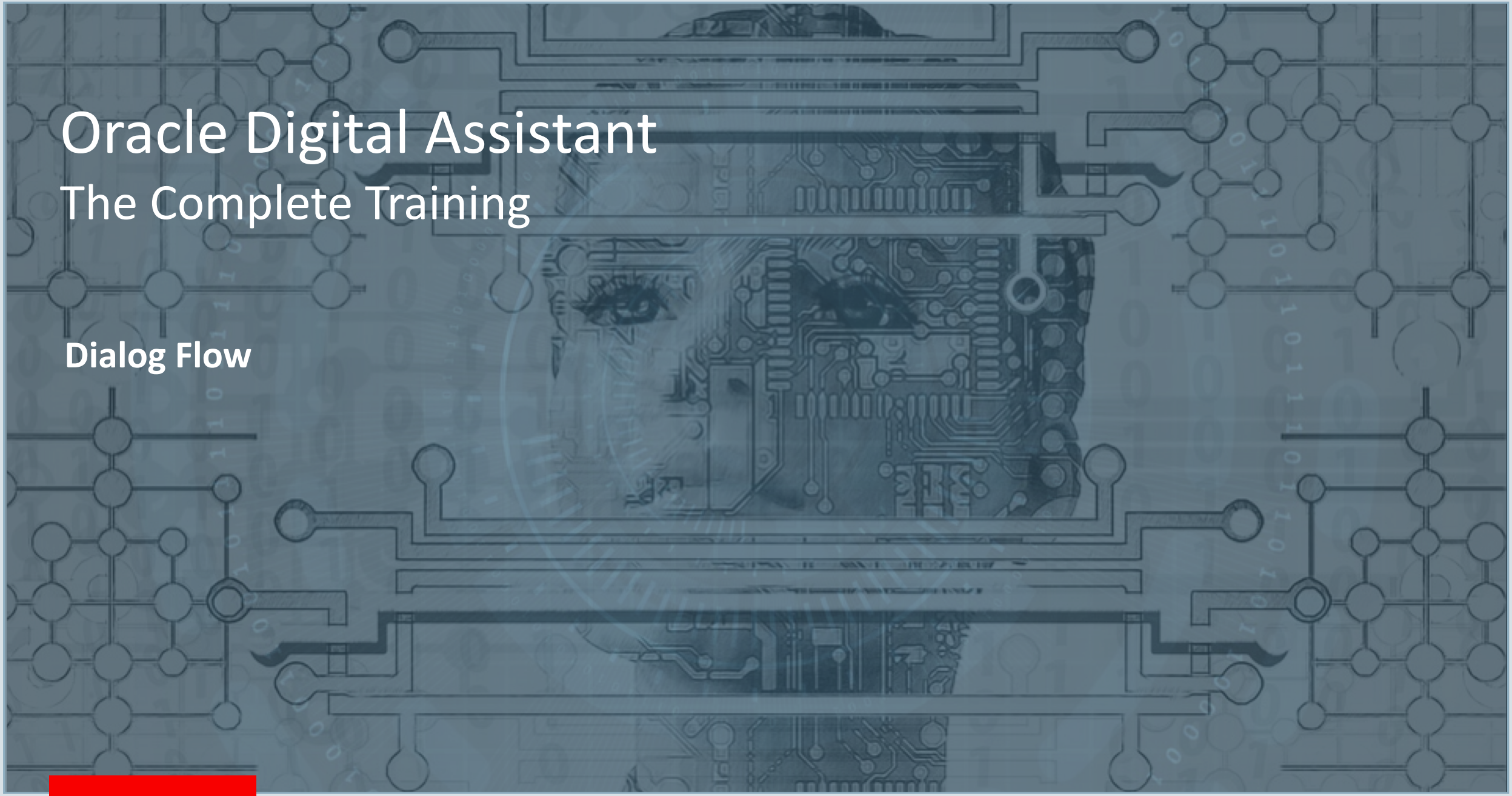

ORACLE®

Oracle Digital Assistant

The Complete Training

Dialog Flow



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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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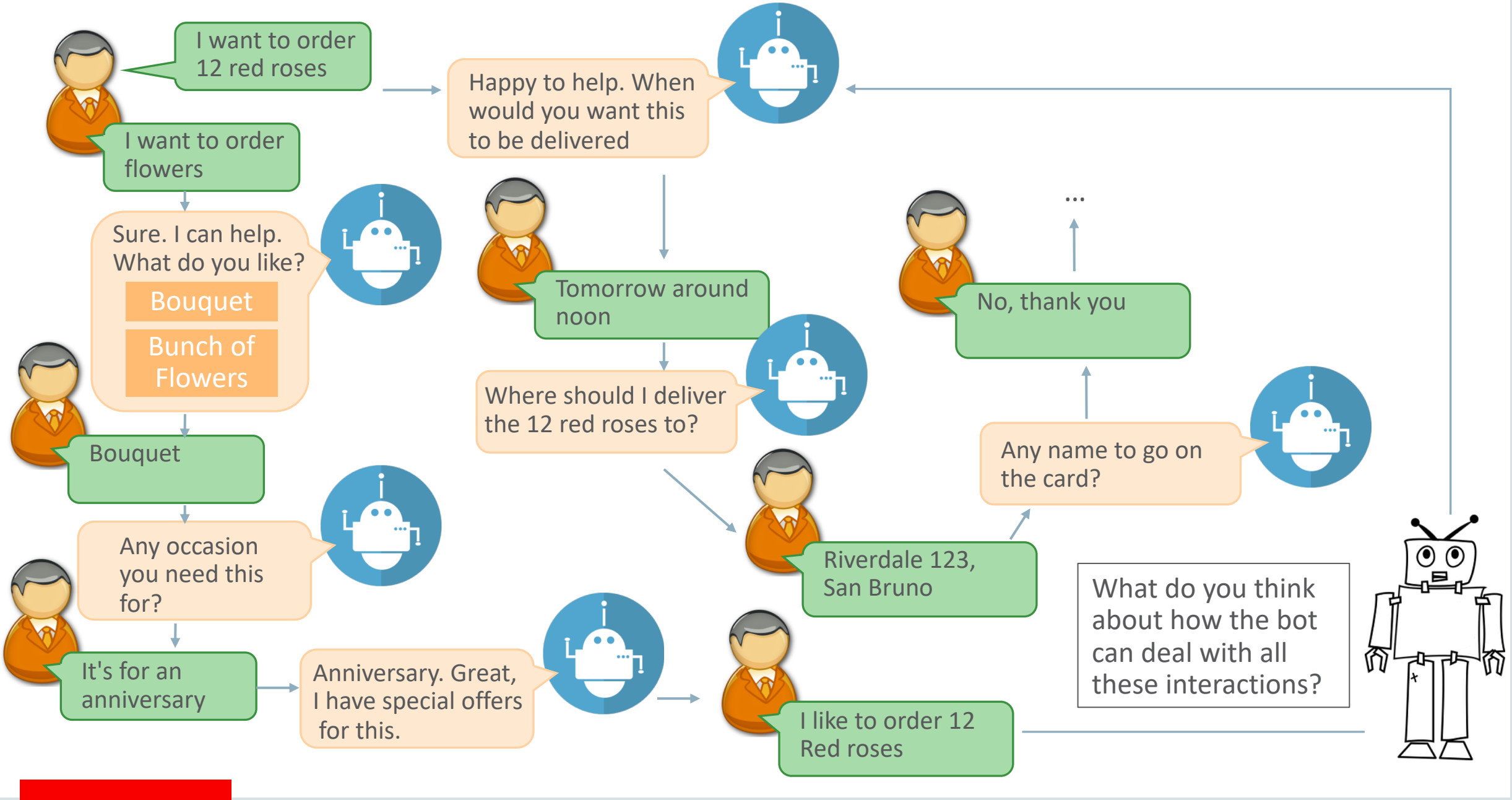
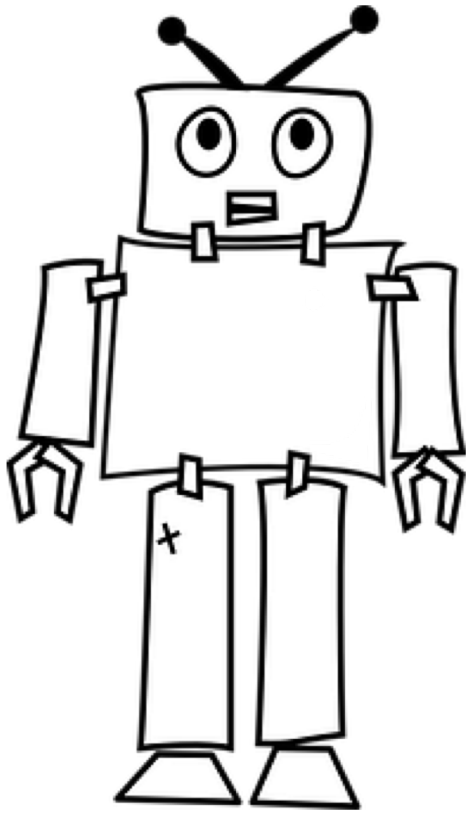


Conversation flows are similar to screen flows in web and mobile applications in that they **define the interaction between a bot and a user** for a specific task



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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"
```

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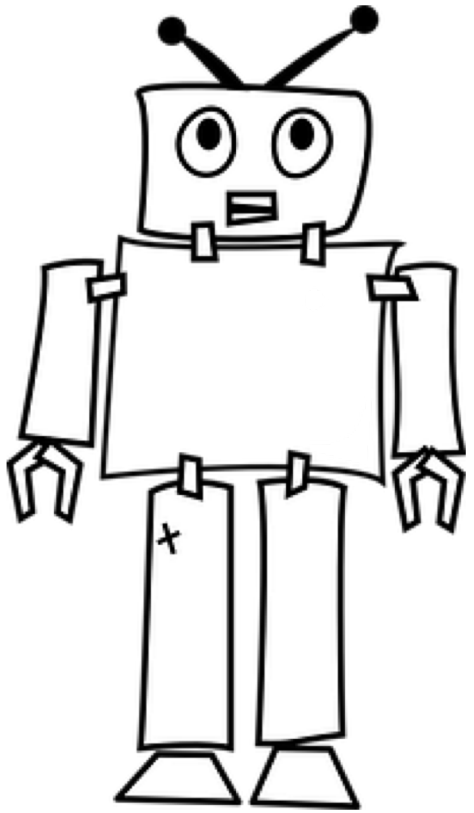
This training session teaches **dialog flow fundamentals** using the dialog flow builder and OBotML.



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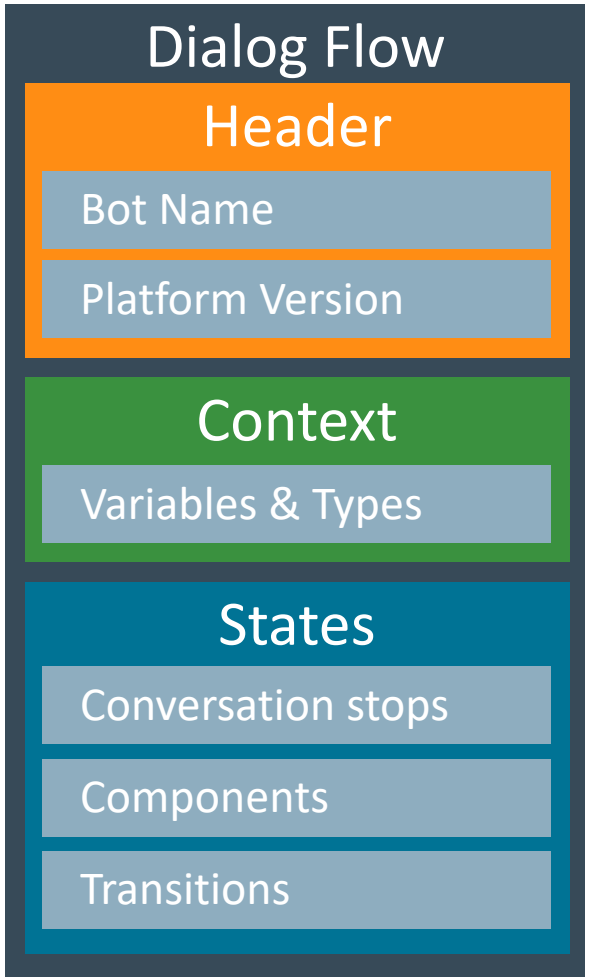
Dialog flow builder

- 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: {}
```

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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

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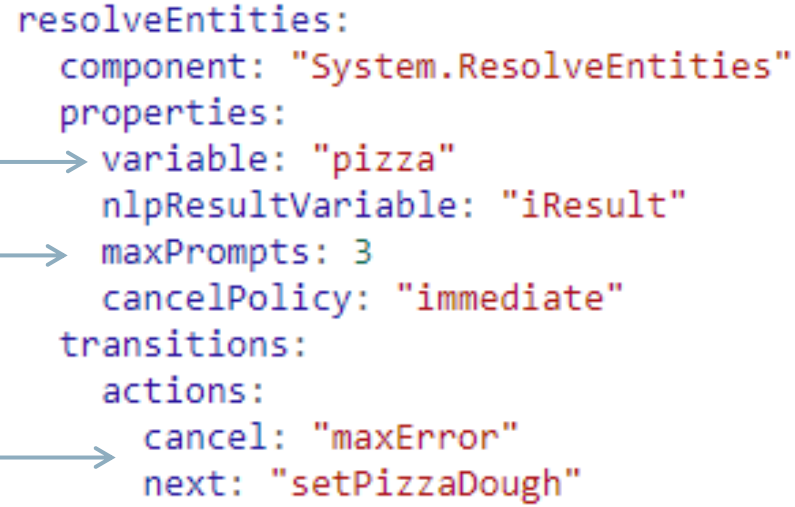
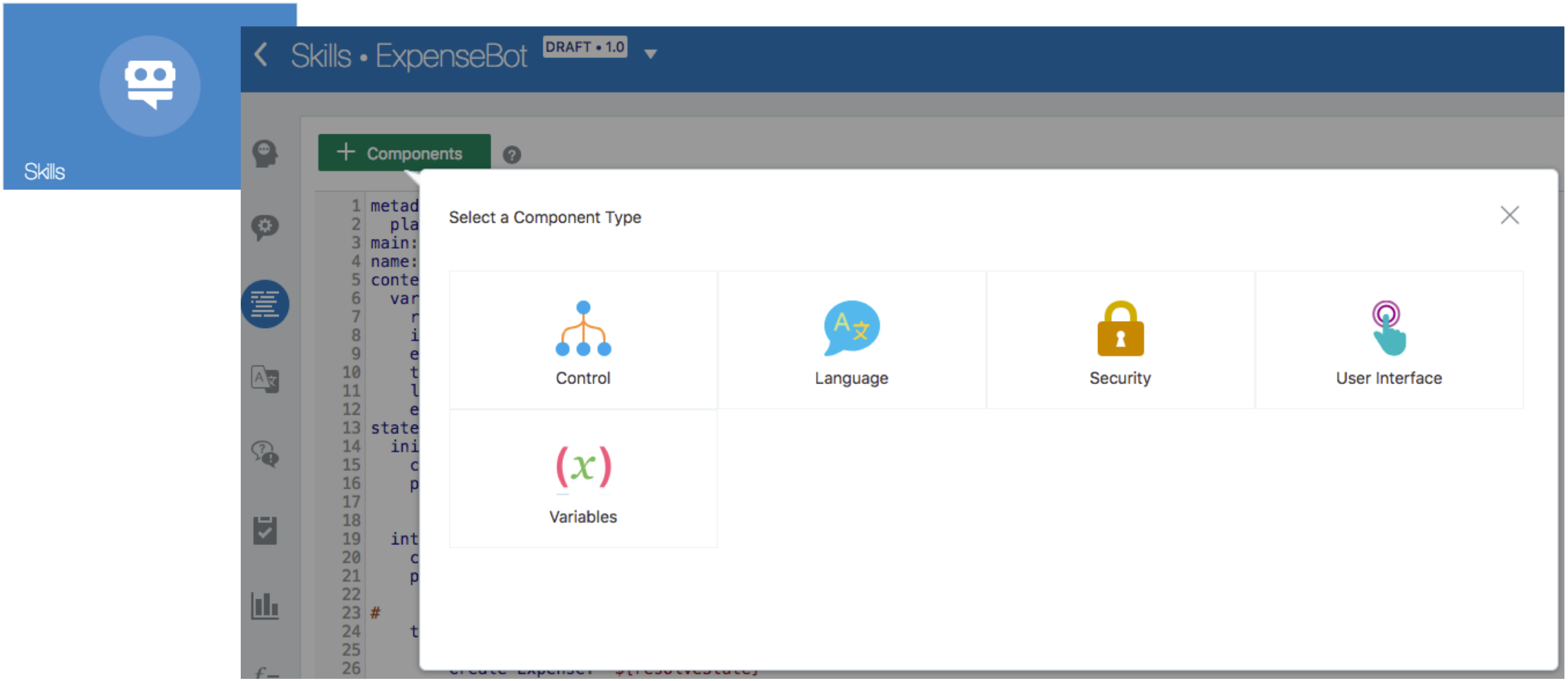
Components

- 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)



Component templates



Control

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

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

Security

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

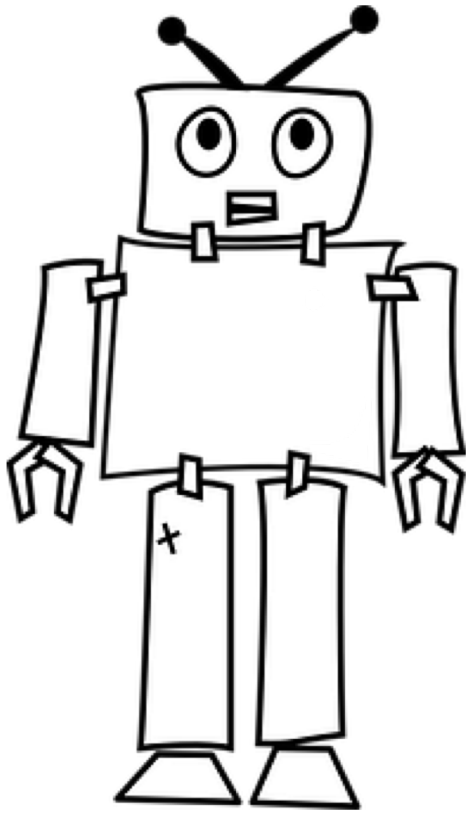
Variables

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

User Interface

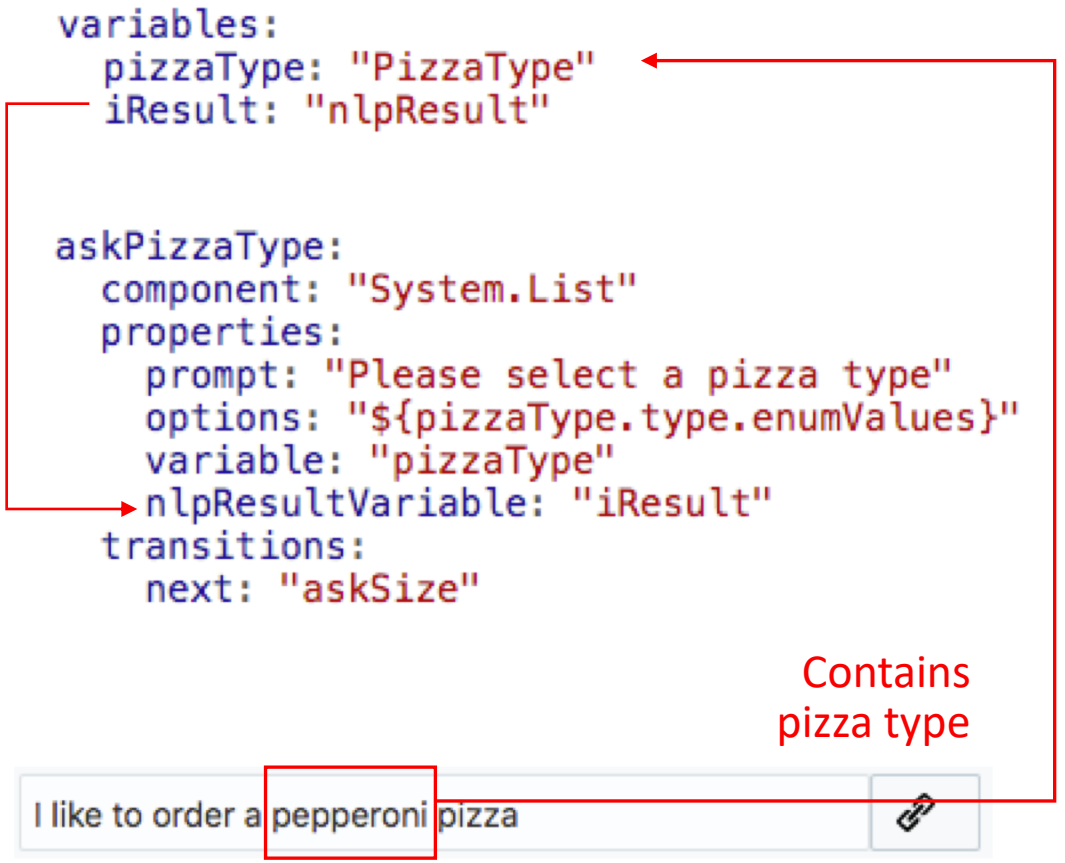
- System.AgentConversation
- System.AgentInitiation
- System.CommonResponse
- System.Interactive
- System.List
- System.ResolveEntities
- System.Text
- System.WebView

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



Entity slotting example

I like to order 12 red roses

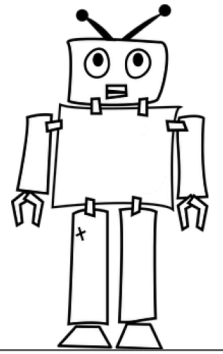
```
bouquetName: "Bouquets"
flowersName: "Flowers"
iResult: "nlpresult"
```

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

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

Roses

```
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

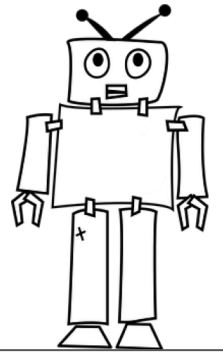
```
bouquetName: "Bouquets"
flowersName: "Flowers"
iResult: "nlpresult"
```

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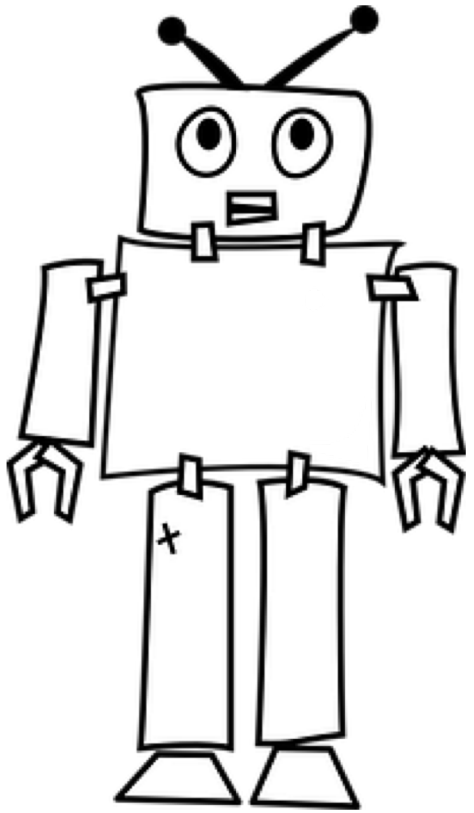
Navigation in a dialog flow is through state transitions.



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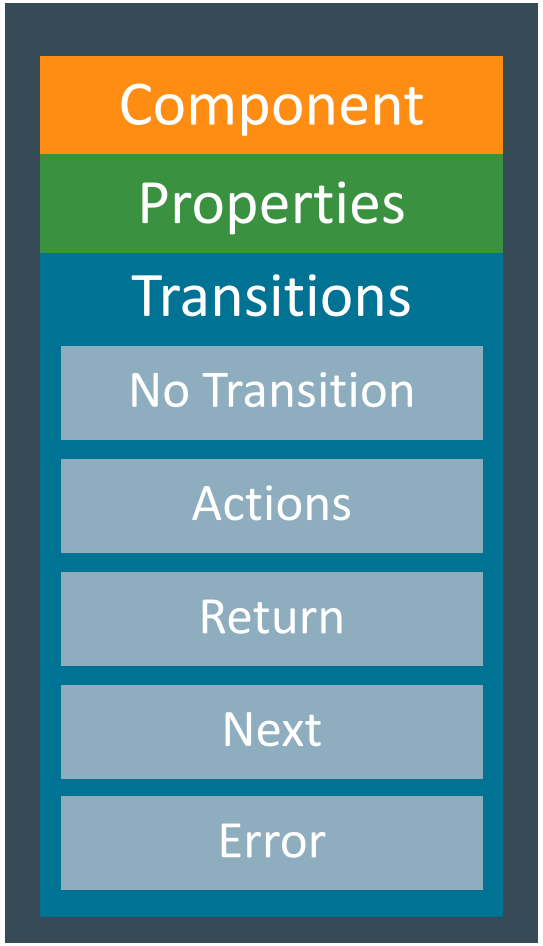
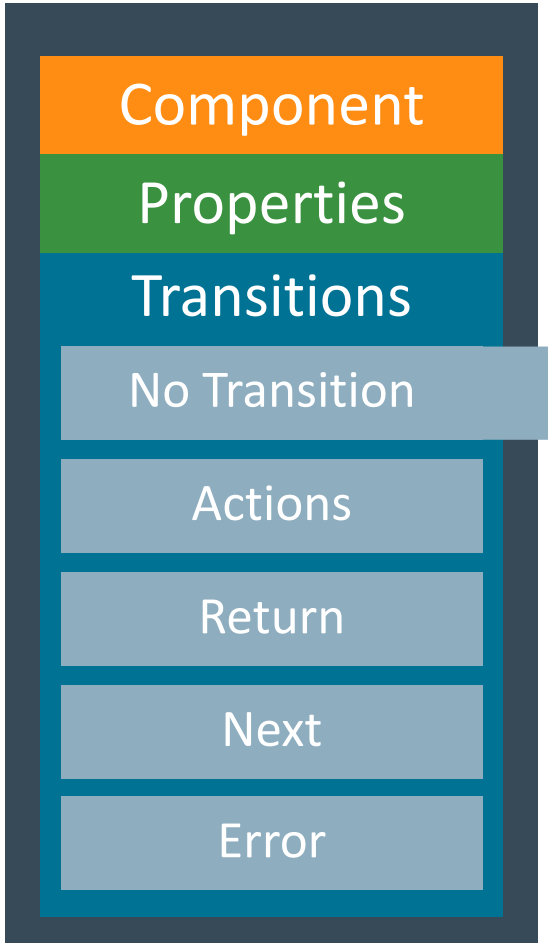
Transitions



- 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.

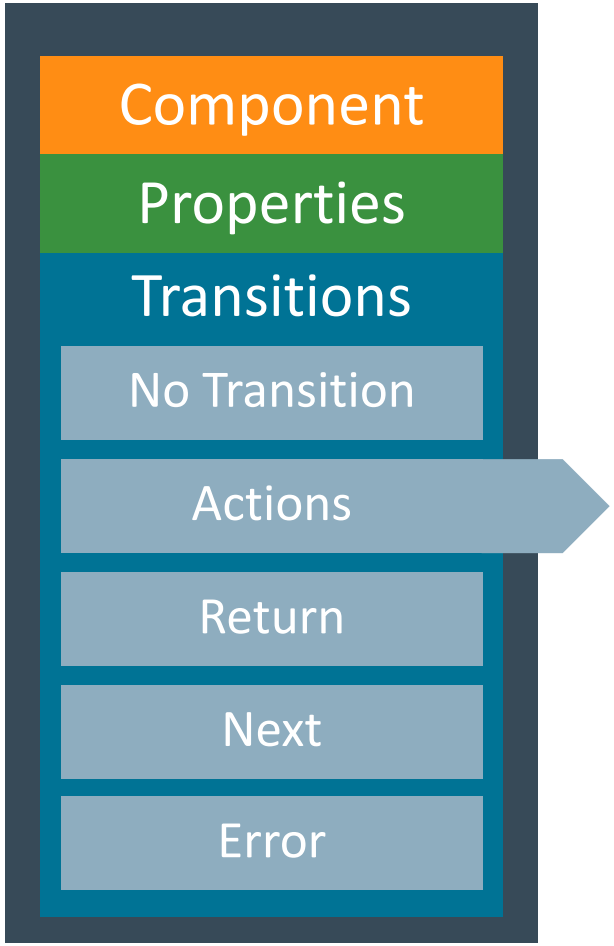
Transitions




```
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"
```

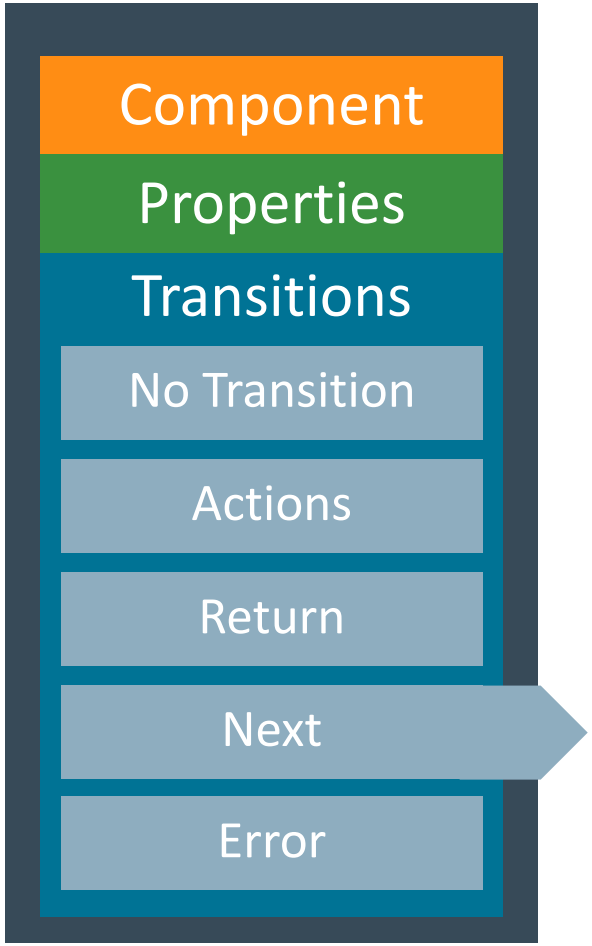
- Actions are
  - Component outcome strings
  - Mapped to a state in the dialog flow by skill designer

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.

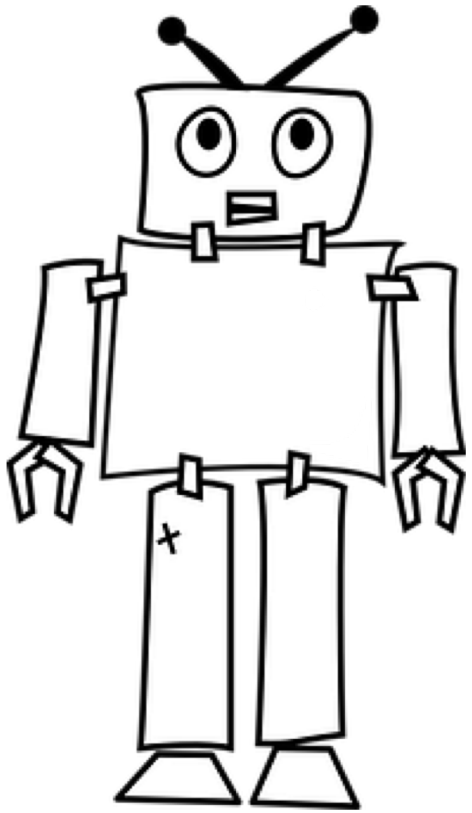
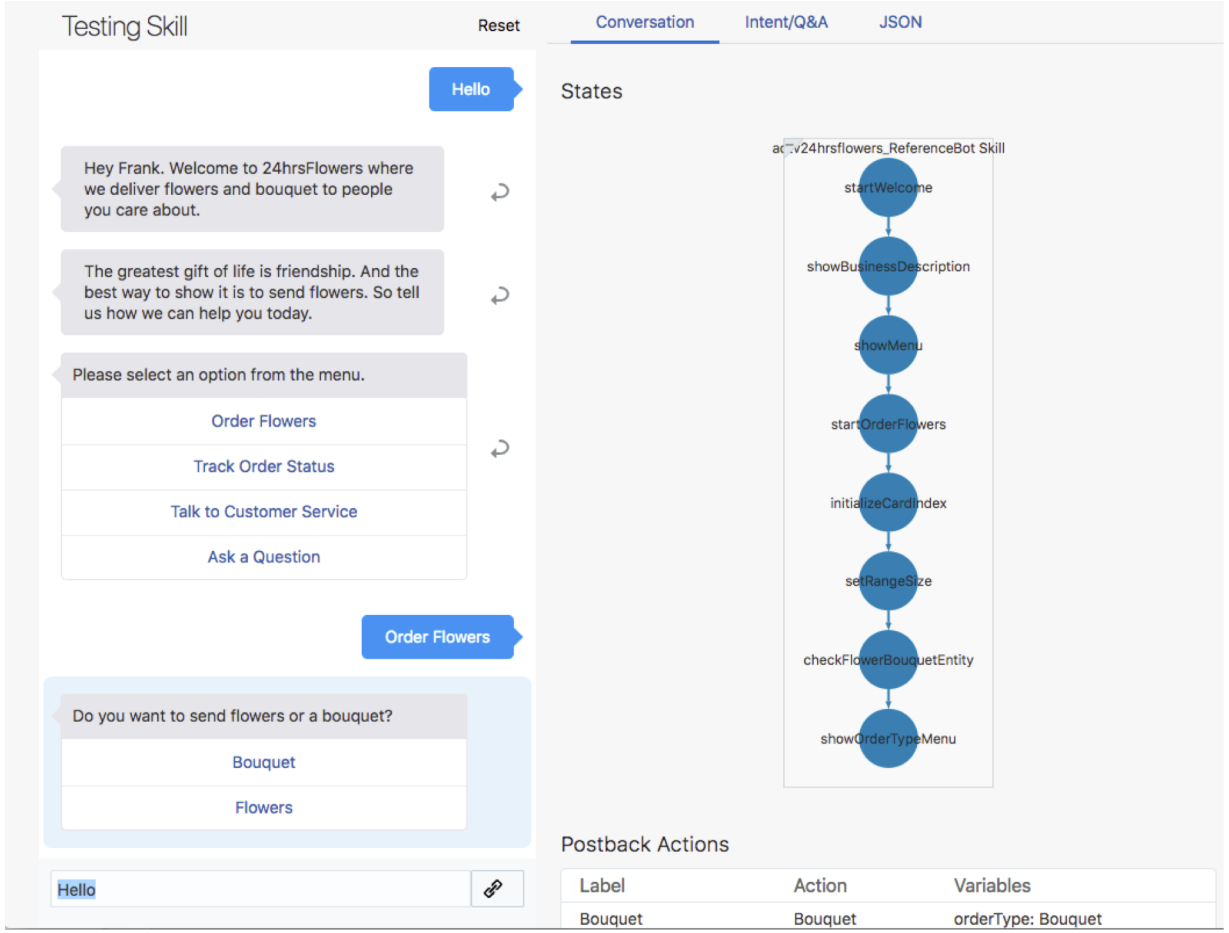


Image courtesy of pixabay.com

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



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