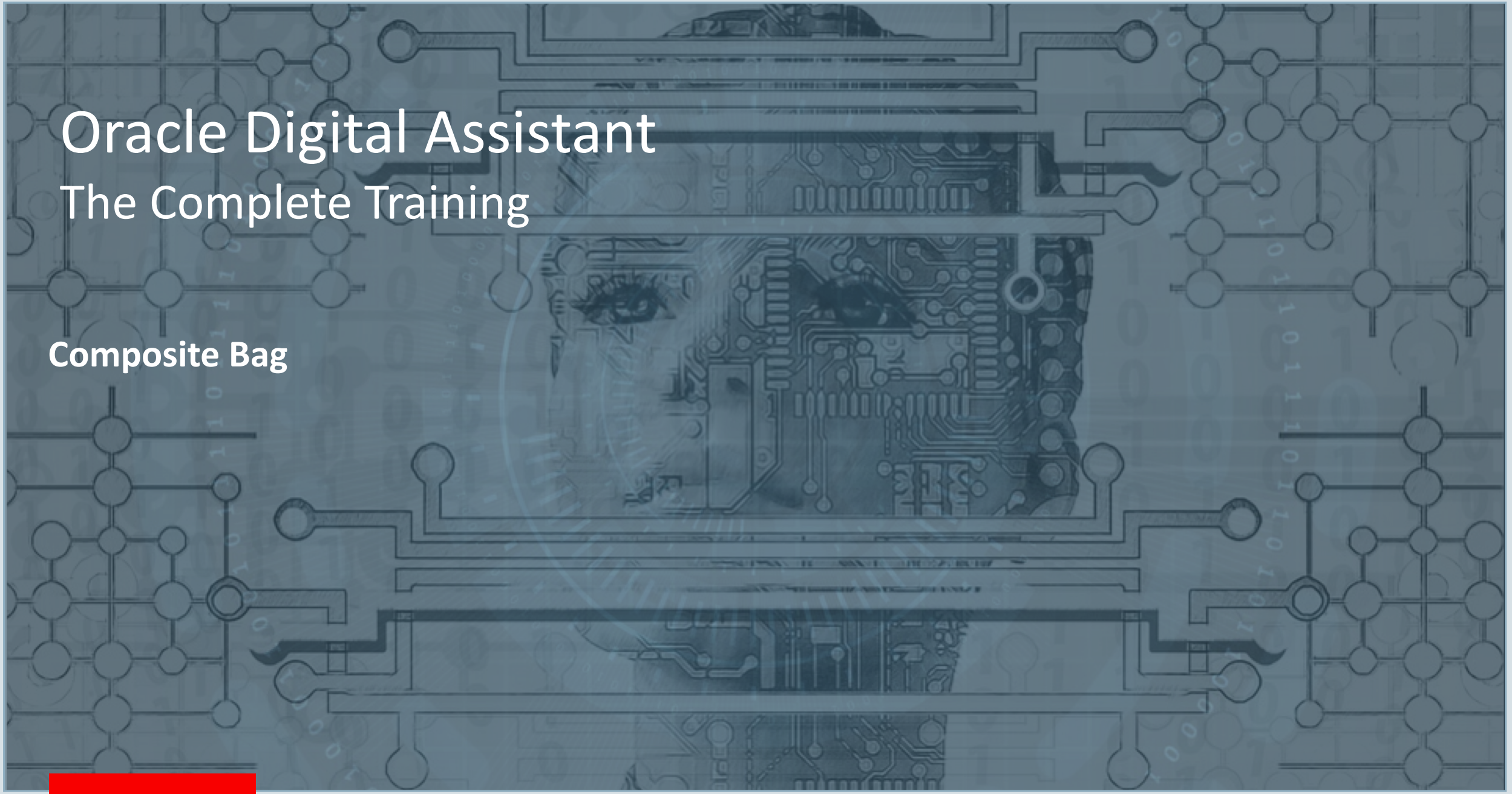

ORACLE®

Oracle Digital Assistant

The Complete Training

Composite Bag



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Topic agenda

1. Entities and why we need them
2. Composite bag basics
3. Composite bag error handling
4. Working with entity values
5. Slotting entities out of order

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Entities and why we need them – a recap

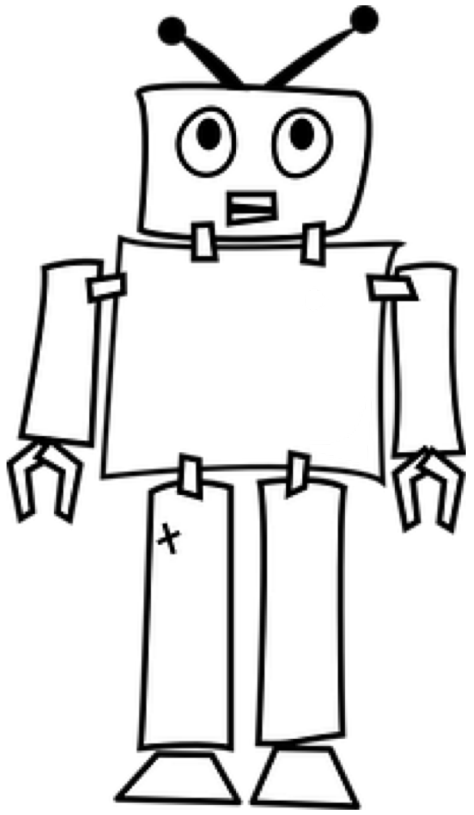
- Important variable elements related to an intent
  - Date, bank account, amount to transfer, pizza size, pizza topping
- Entity slotting
  - Process of filling those variable elements

```
startBalances:
  component: "System.SetVariable"
  properties:
    variable: "accountType"
    value: "${iResult.value.entityMatches['AccountType'][0]}"
  transitions: {}

askBalancesAccountType:
  component: "System.List"
  properties:
    options: "${accountType.type.enumValues}"
    prompt: "For which account do you want your balance?"
    variable: "accountType"
  transitions: {}
```

```
askBalancesAccountType:
  component: "System.List"
  properties:
    options: "${accountType.type.enumValues}"
    nlpResultVariable: "iResult"
    prompt: "For which account do you want your balance?"
    variable: "accountType"
  transitions: {}
```

Can anyone see the **problem** with this approach?



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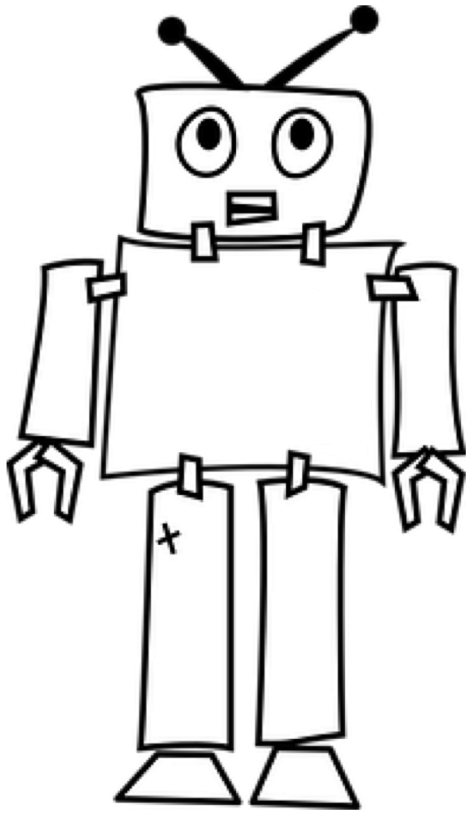
```
resolvesize:
  component: "System.SetVariable"
  properties:
    variable: "size"
    value: "${iResult.value.entityMatches['PizzaSize'][0]}"
  transitions: {}
resolvecrust:
  component: "System.SetVariable"
  properties:
    variable: "crust"
    value: "${iResult.value.entityMatches['PizzaCrust'][0]}"
  transitions: {}
resolvetype:
  component: "System.SetVariable"
  properties:
    variable: "type"
    value: "${iResult.value.entityMatches['PizzaType'][0]}"
  transitions: {}
askage:
  component: "System.Output"
  properties:
    text: "How old are you?"
  transitions: {}
checkage:
  component: "AgeChecker"
  properties:
    minAge: 18
  transitions:
    actions:
      allow: "crust"
      block: "underage"
crust:
  component: "System.List"
  properties:
    options: "Thick,Thin,Stuffed,Pan"
    prompt: "What crust do you want for your Pizza?"
    variable: "crust"
  transitions: {}
size:
  component: "System.List"
  properties:
    options: "${size.type.enumValues}"
    prompt: "What size Pizza do you want?"
    variable: "size"
  transitions: {}
type:
  component: "System.Text"
  properties:
    prompt: "What Type of Pizza do you want?"
    variable: "type"
  transitions: {}
```



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The challenge of “real world” entity slotting

- Many values required for an intent
- Error handling for each entity value
- Different prompts should the user error
- Out of order information
- Validation
- Allow multiple values or not?
- Slot entity if specifically said, otherwise, default it

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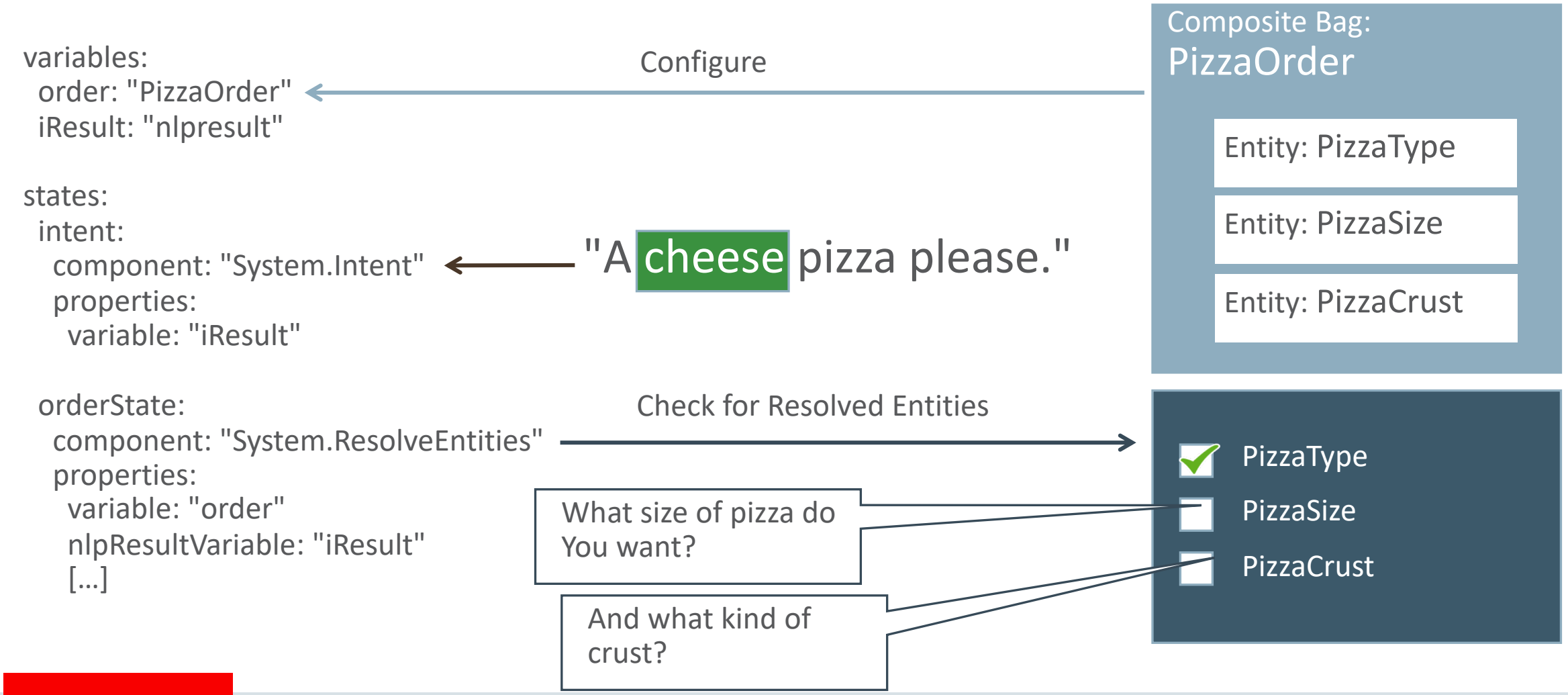
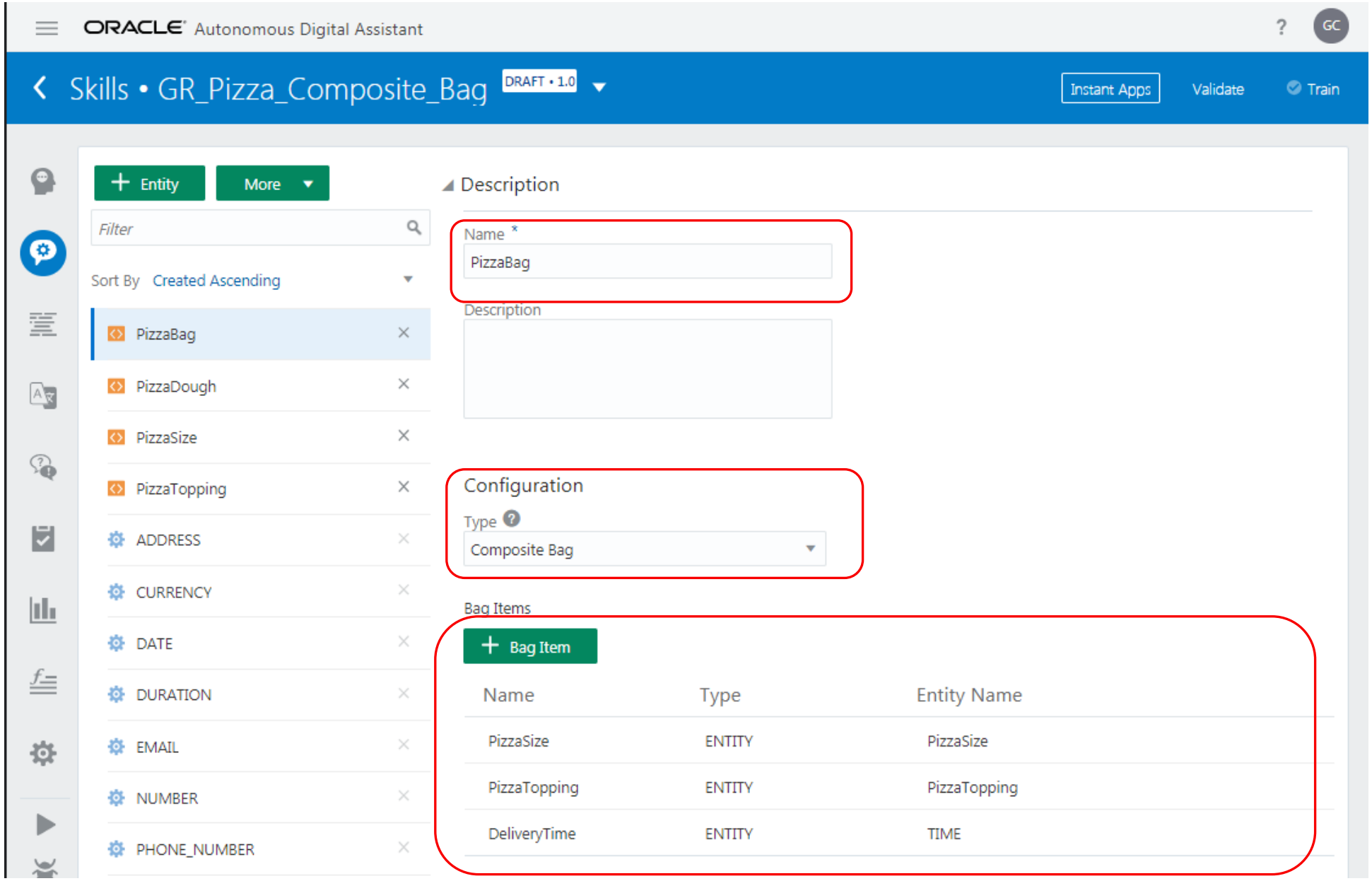
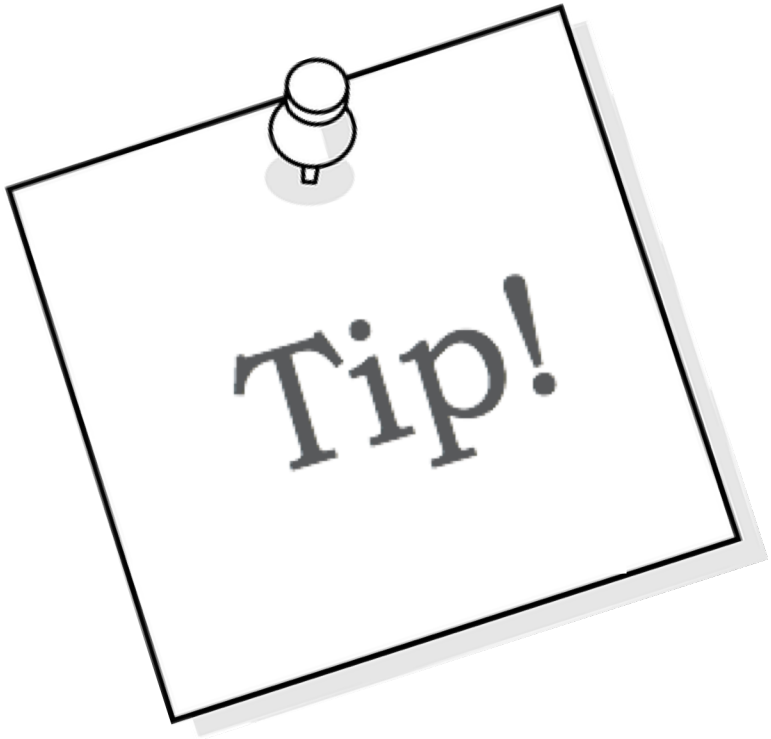
Composite bag entity

- Models a business domain object
  - Pizza order, holiday request, expense
- Each composite bag is composed of one to many items
  - Custom entities
  - Built-in entities
  - String, location and attachment
- All contained entities get resolved automatically in a single dialog flow state
  - System.ResolveEntities
    - Automatically displays enumerated values as a list and provides pagination
  - System.CommonResponse

Ordering a pizza with composite bag entity



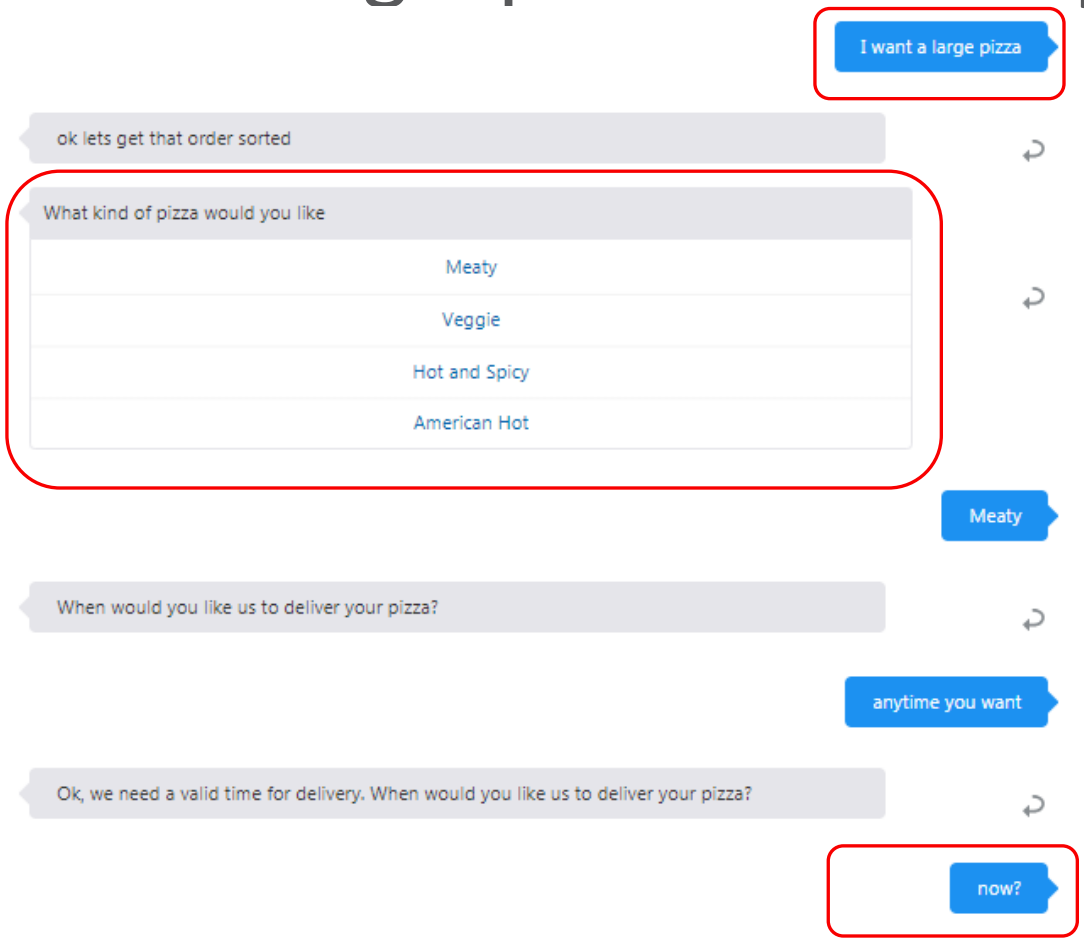


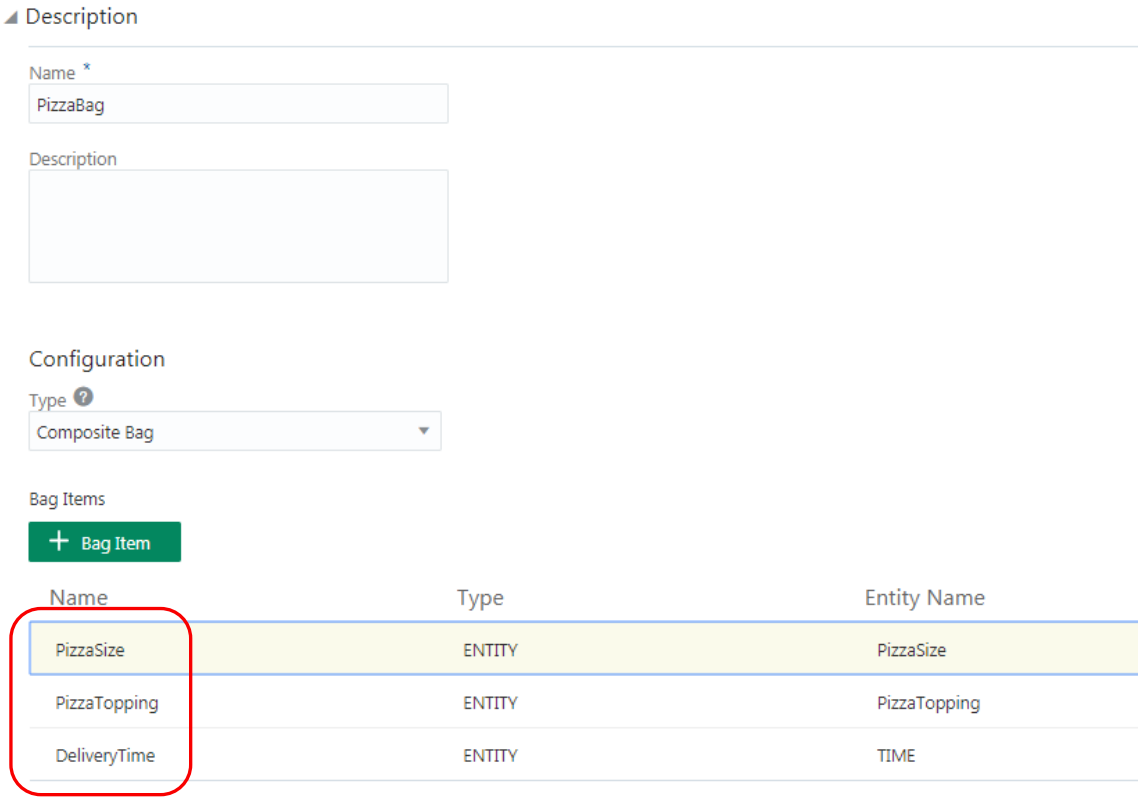


Remember to train if you add an item to composite bag

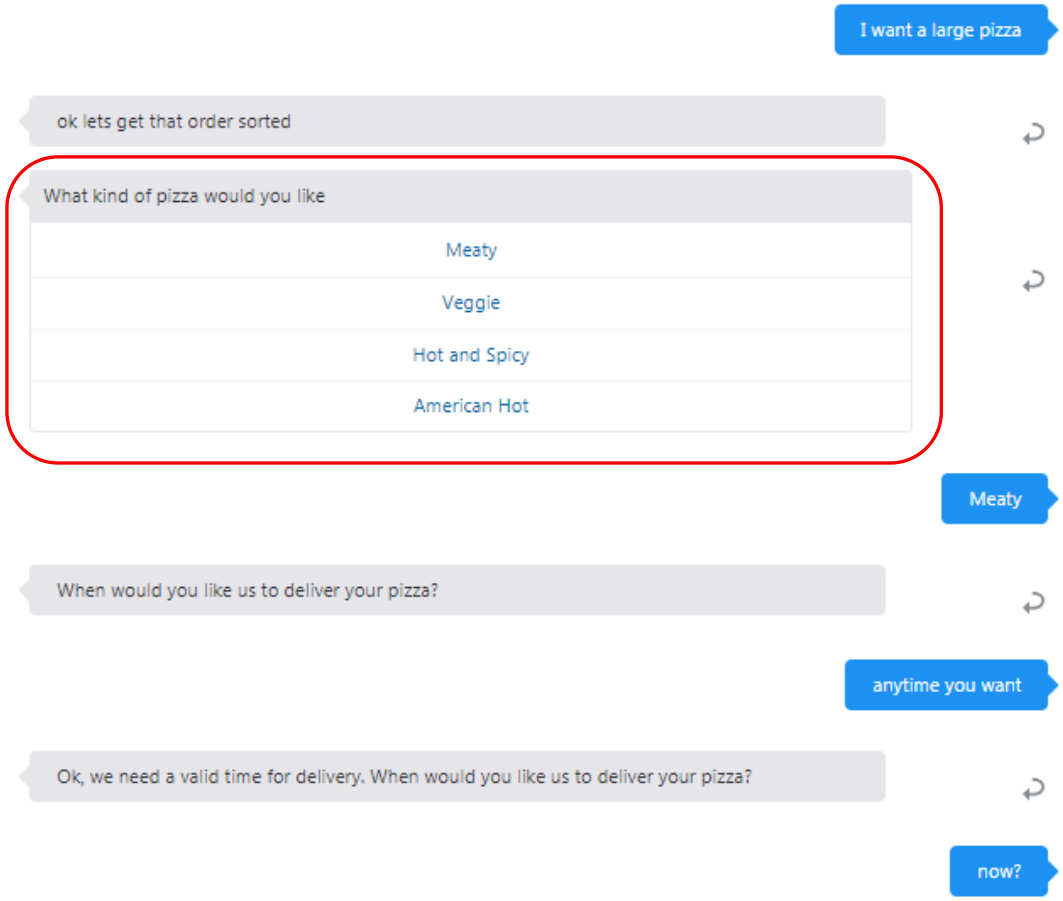
```
#metadata: information about the flow
#  platformVersion: the version of the bots platform that this flow was written to work with
metadata:
  platformVersion: 1.0
main: true
name: GR_Pizza_Composite_Bag
#context: Define the variables which will used throughout the dialog flow here.
context:
  variables:
    iResult: "nlpresult"
    pizza: "PizzaBag"

states:

  intent:
    component: "System.Intent"
    properties:
      variable: "iResult"
      optionsPrompt: "Do you want to"
    transitions:
      actions:
        OrderPizza: "startOrderPizza"
        WelcomePizza: "startWelcome"
        unresolvedIntent: "startUnresolved"

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

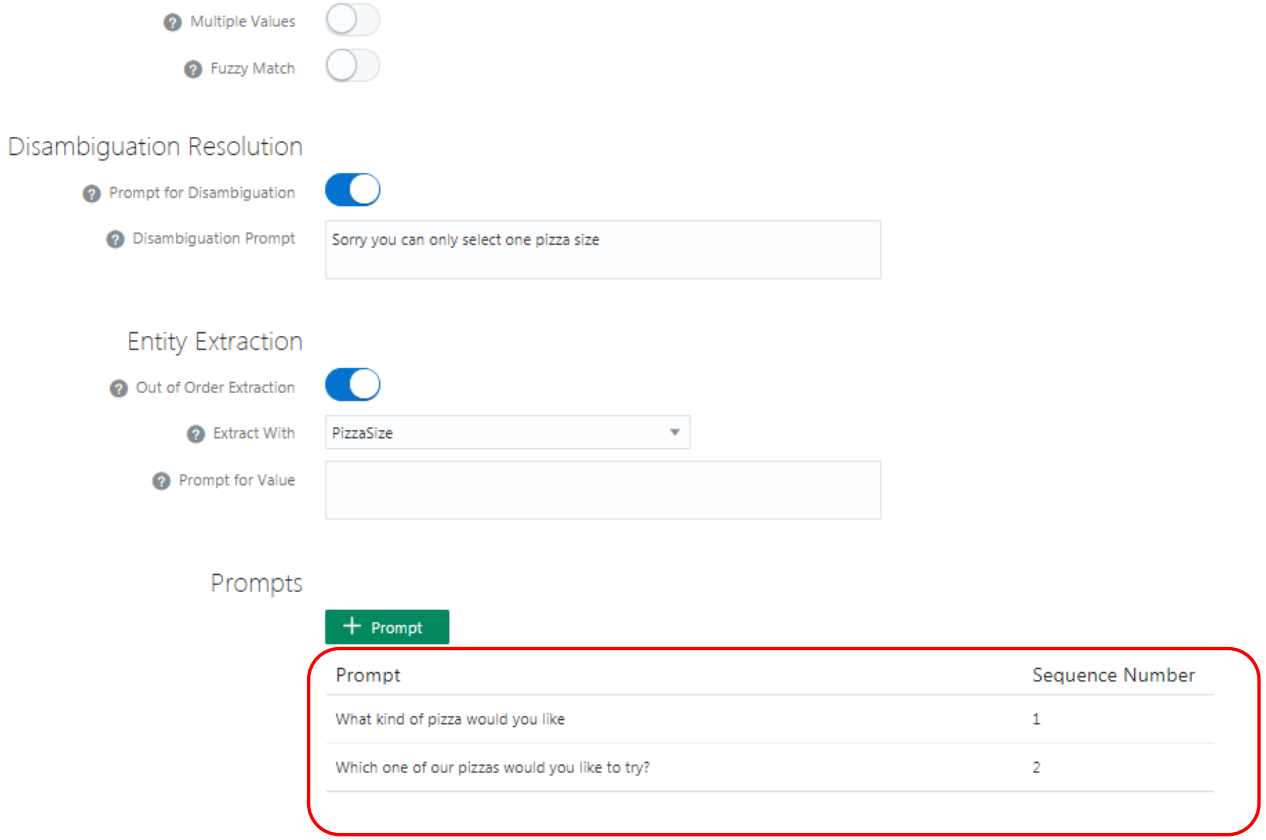
Ordering a pizza with composite bag entity



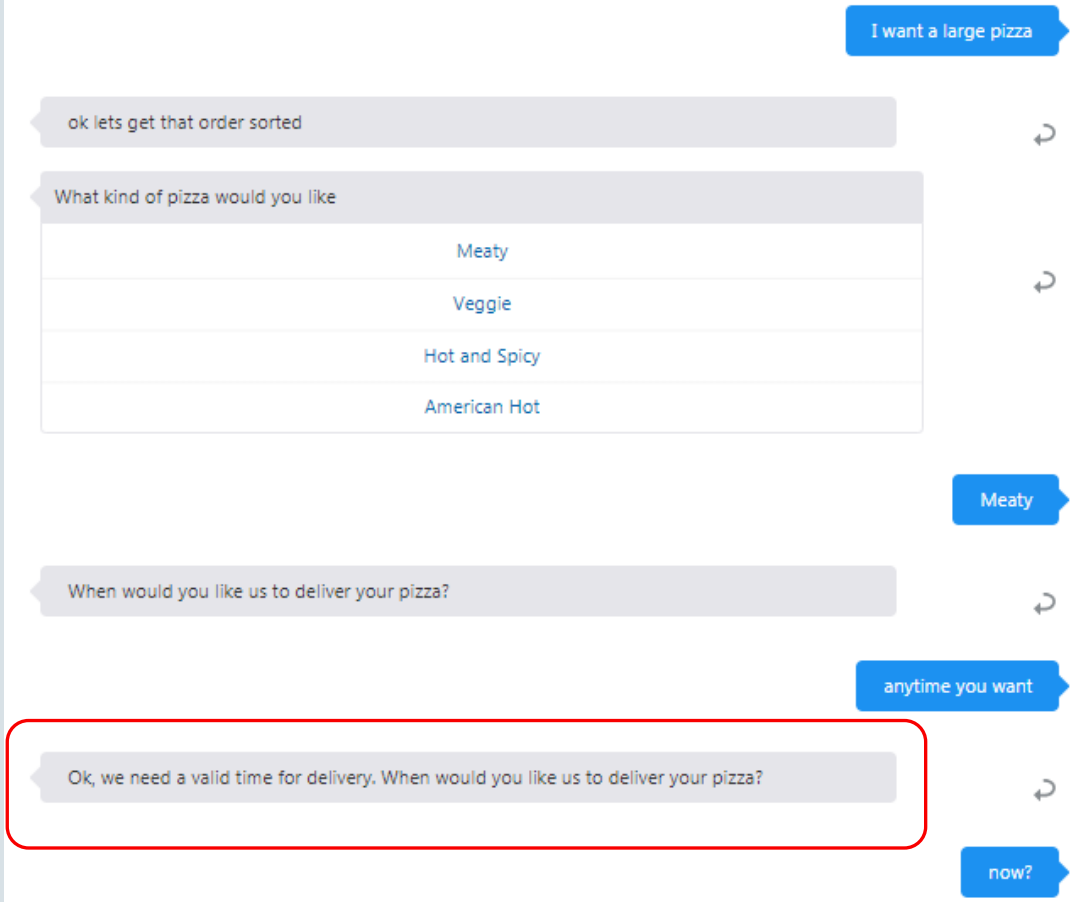


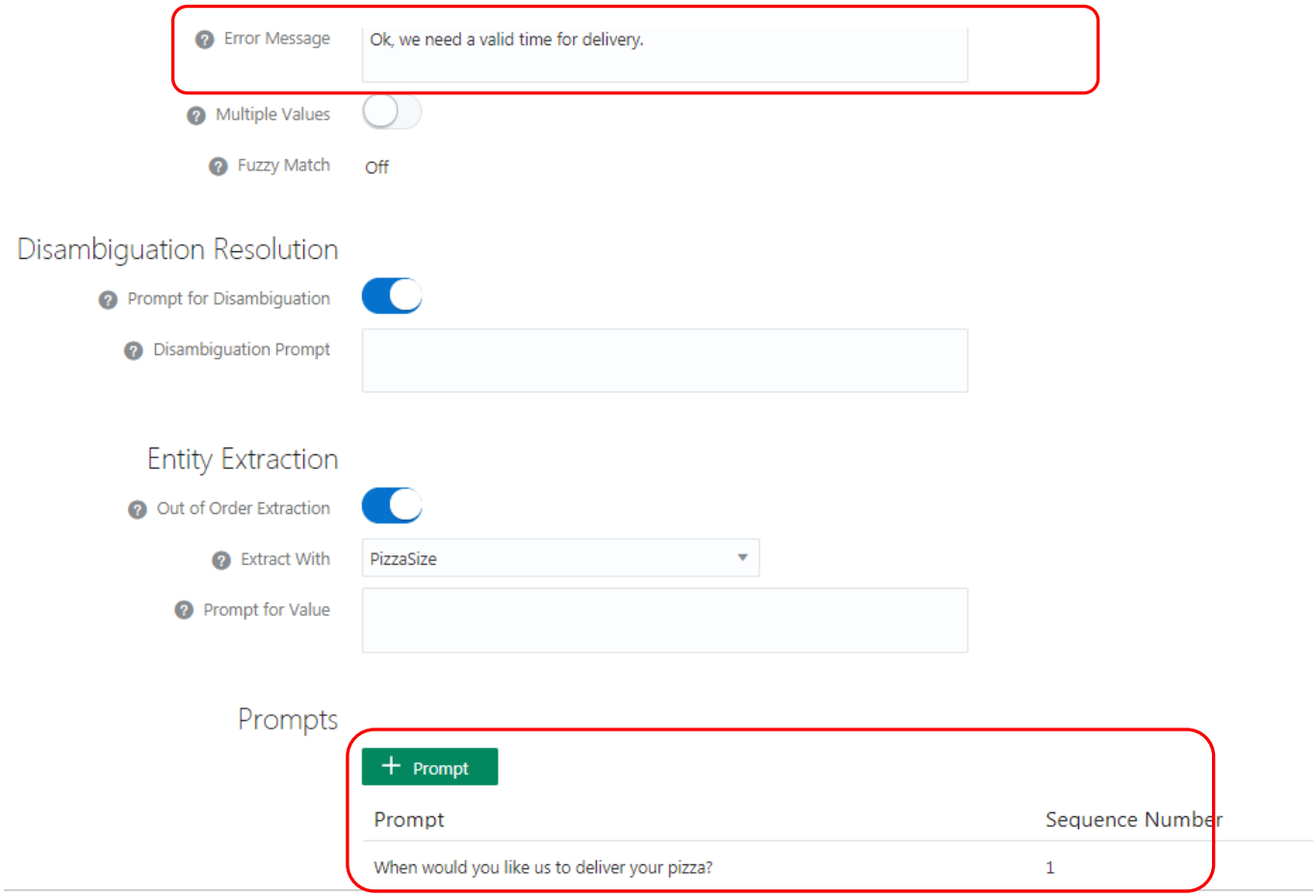
Composite bag prompts





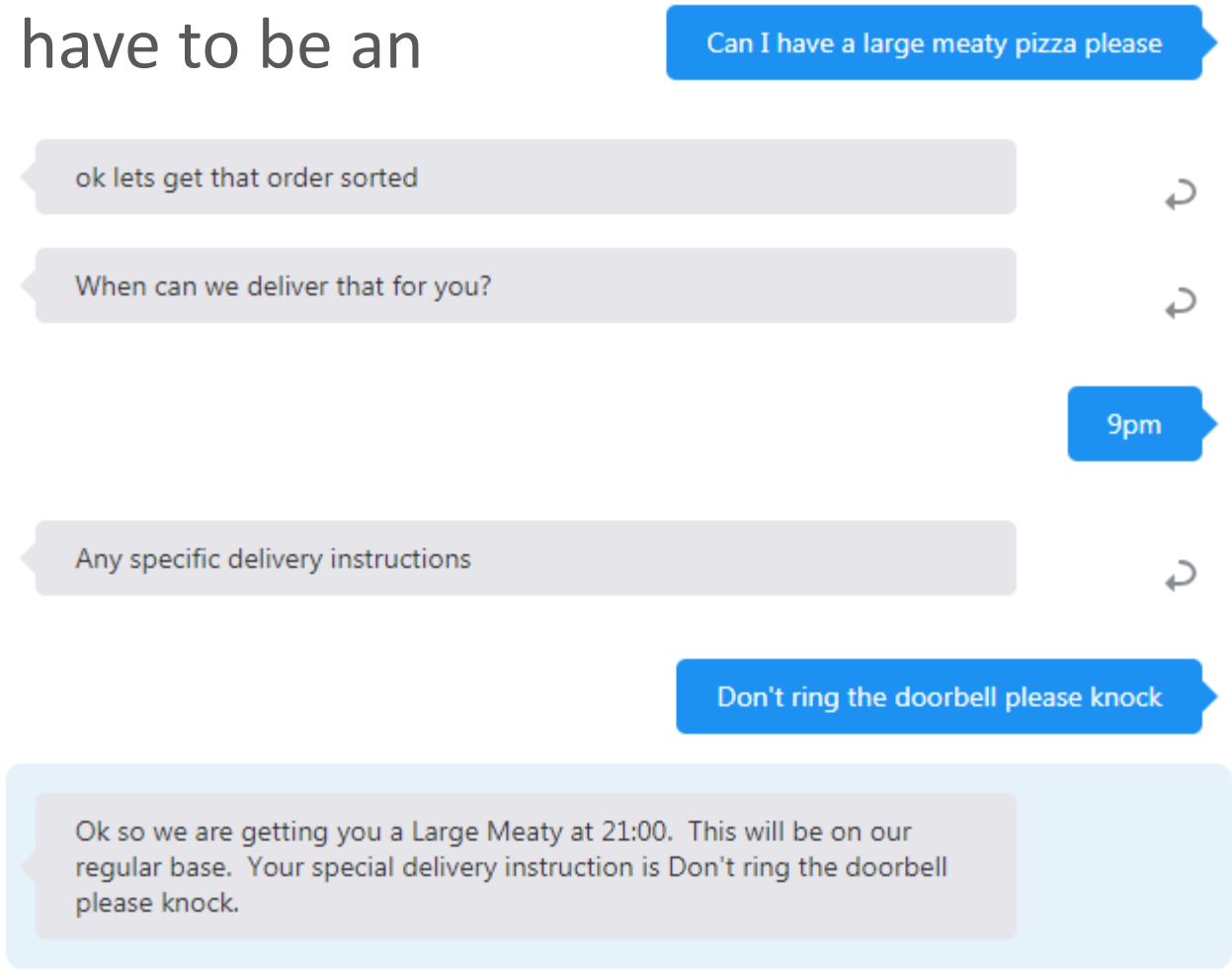
Composite bag prompts

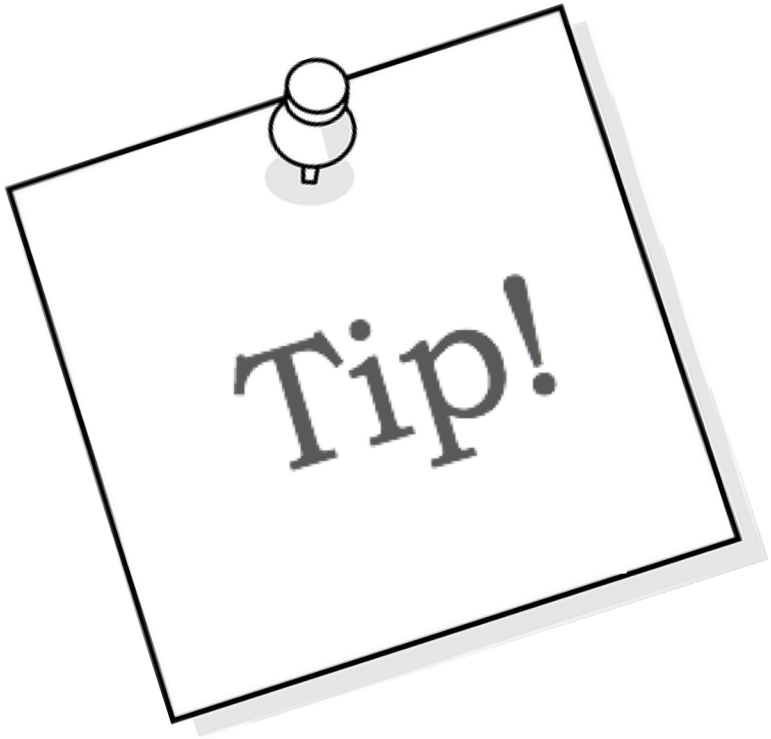




Composite bag string

- A composite bag entity item doesn’t have to be an entity
  - String, location, attachment





Entities are resolved in the **order** in which they appear in the composite bag – you can change the order at design time

resolveEntities resolves composite bag in dialog flow

```
resolveEntities:
  component: "System.ResolveEntities"
  properties:
    variable: "pizza"
    nlpResultVariable: "iResult"
    maxPrompts: 3
    cancelPolicy: "immediate"
    headerText: "This message appears for each entity"
  transitions:
    actions:
      cancel: "maxError"
      next: "setPizzaDough"
```

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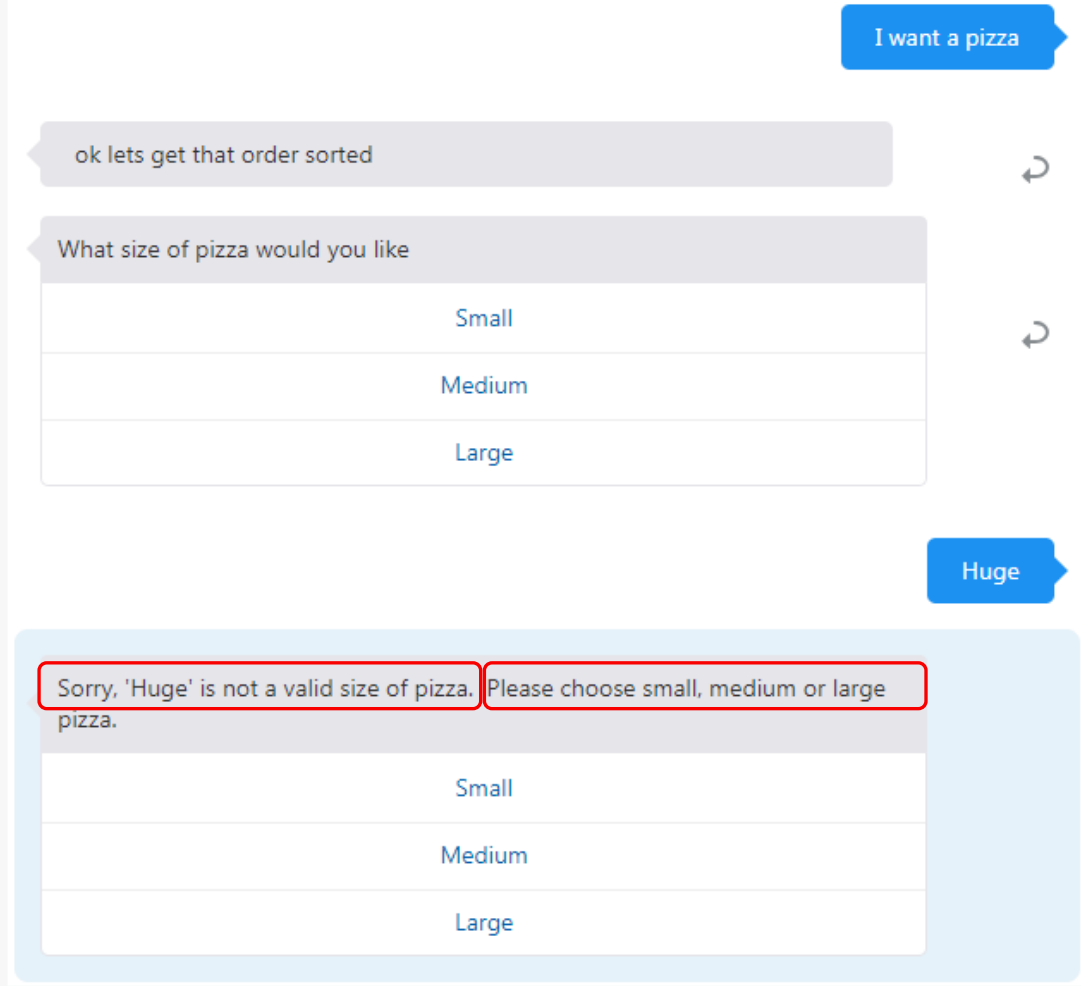
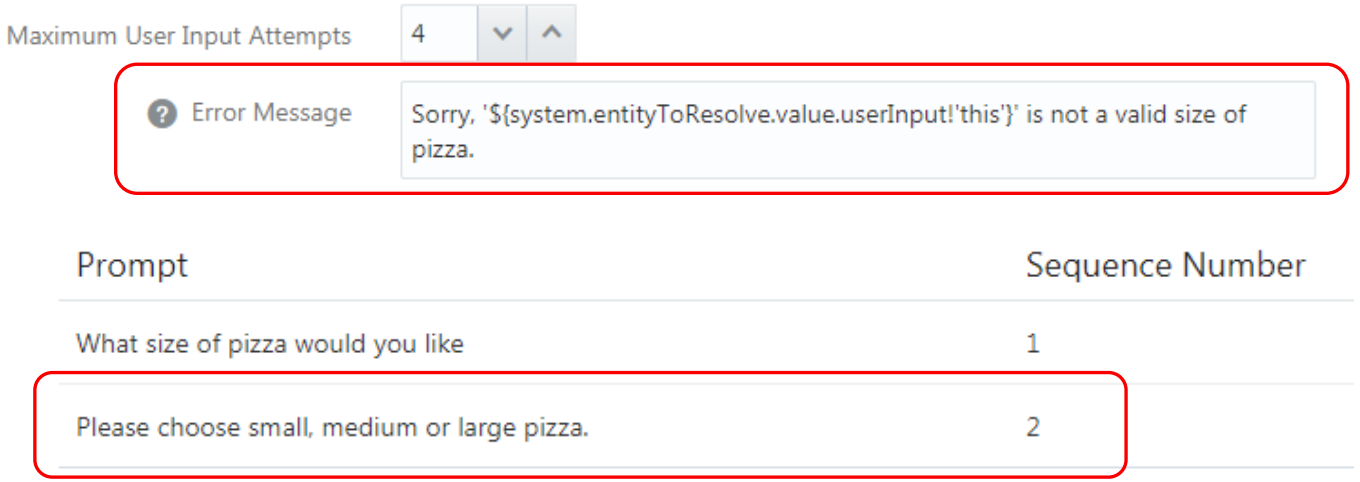
Composite bag validation and error handling

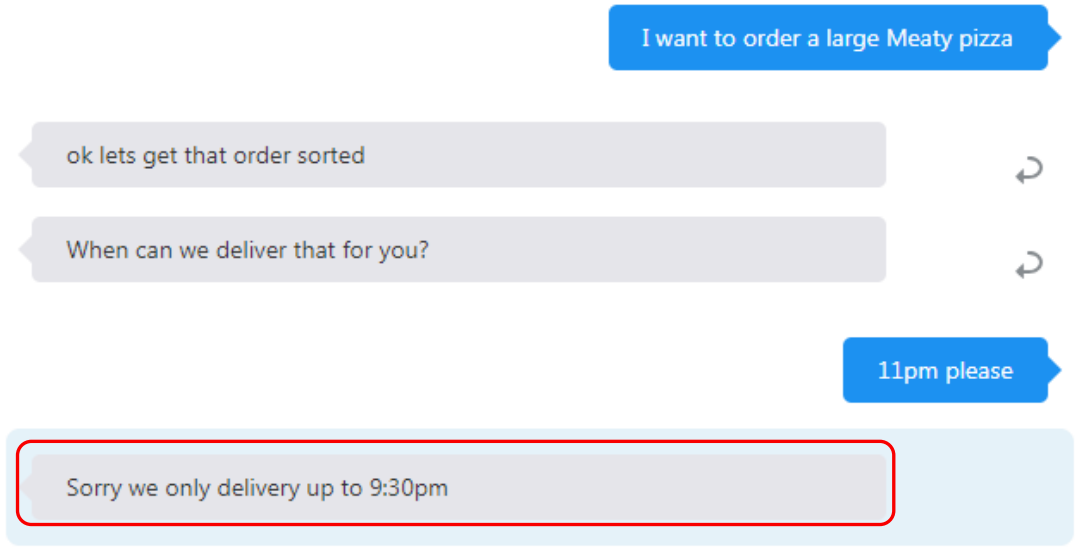
- You can define error messages for invalid input
  - This can also include Apache FreeMarker expressions
- You can define validation rules to enforce business rules
  - Also can include Apache FreeMarker expressions
- You can define maximum attempts for valid input
  - Error retries in composite bag overrides maxPrompts in dialog flow

Composite bag validation and error handling





Composite bag validation and error handling



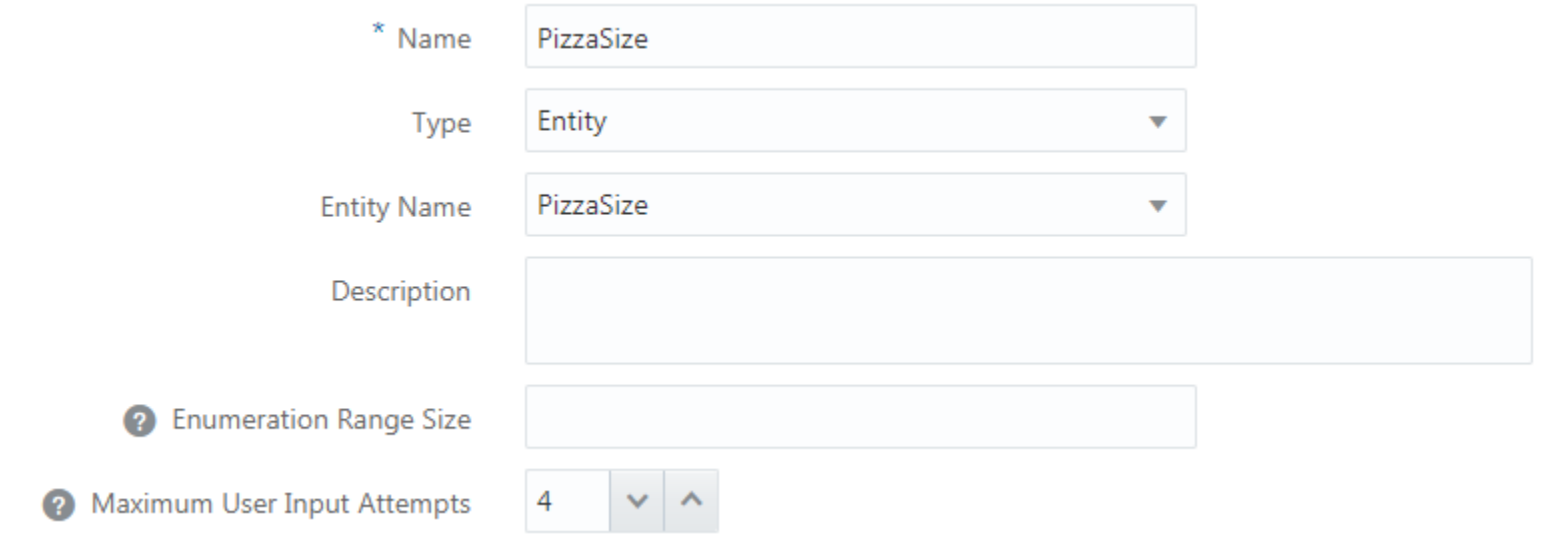
+ Validation Rule

Expression	Error Message
${(pizza.value.DeliveryTime.hrs?number < 10)?then('true','false')}	Sorry we only delivery up to 9:30pm
${(.now?date?number < pizza.value.DeliveryTime.date?number)?then('true','false')}	OK we are quick but we don't have a time machine!

Composite bag validation and error handling

- Define the maximum number of retries in dialog flow
- Override within each entity
- Define if failure is
  - Immediate
  - On last entity only (backwards compatibility)

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



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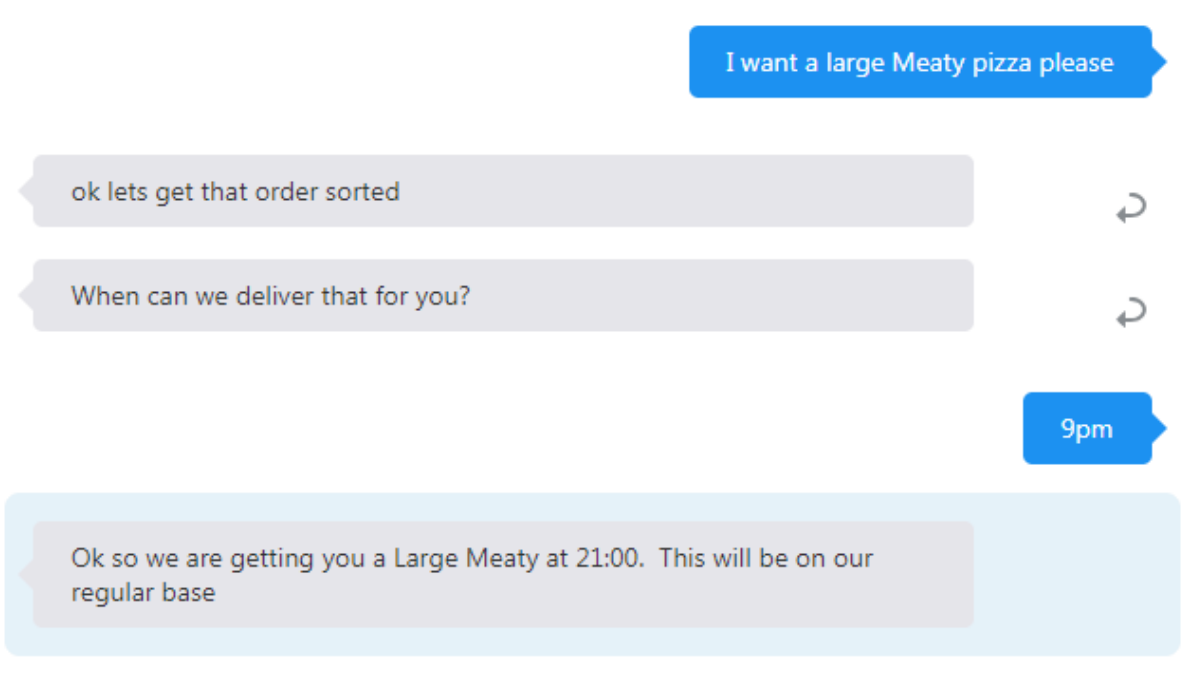
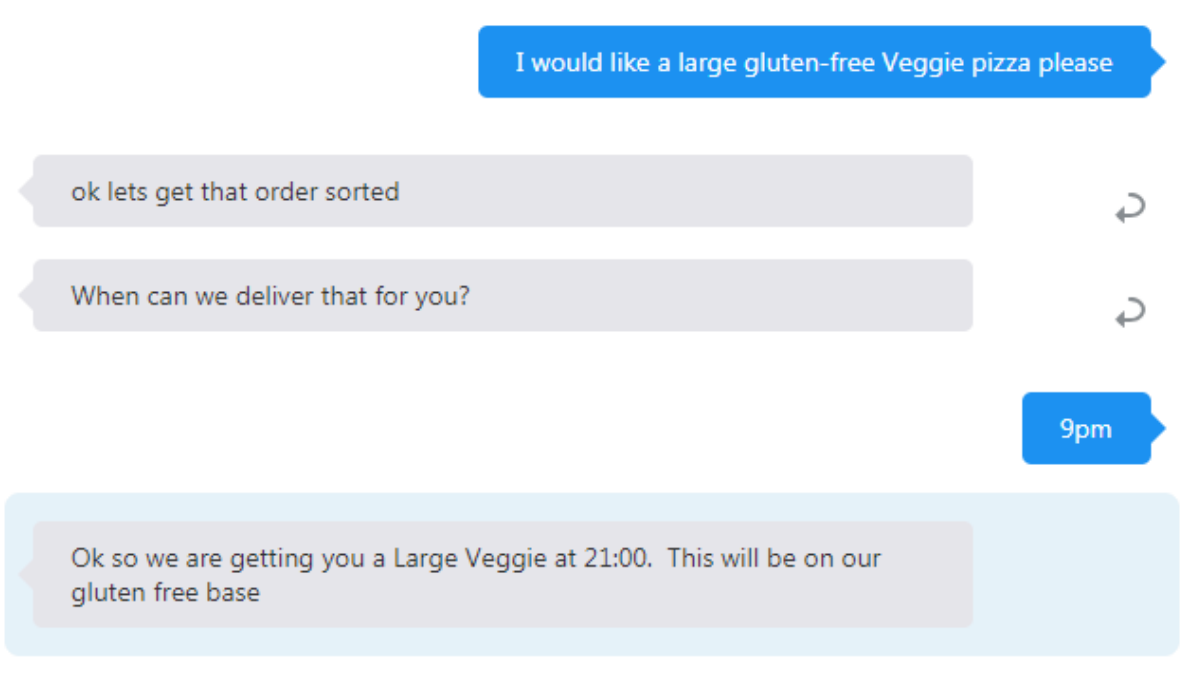
Defaulting entity values

- Composite bag will slot any entity values in initial sentence
- Then will prompt for other entity values
- What if you want to capture a entity value if mentioned, but not specifically prompt for it
  - Pizza dough
    - Assume regular unless someone specifically asks for gluten-free

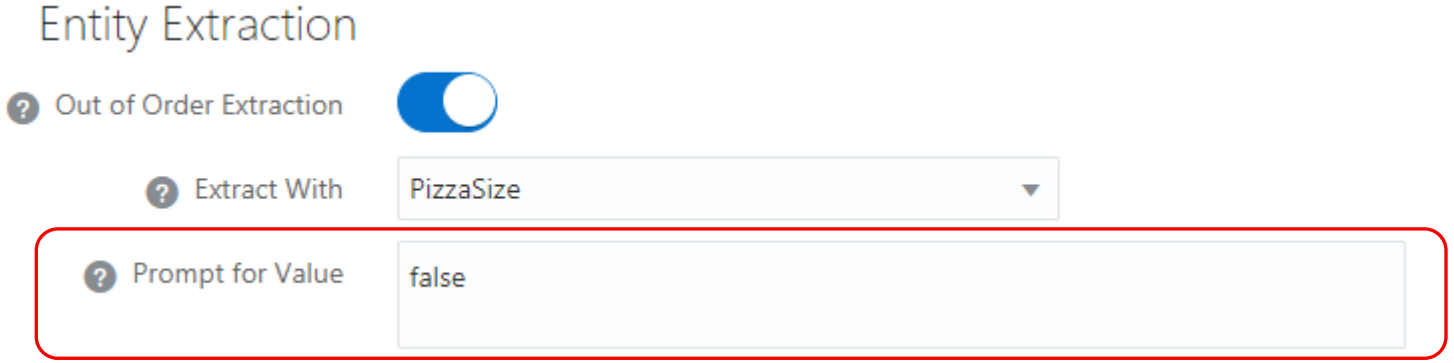
Defaulting entity values





Defaulting entity values

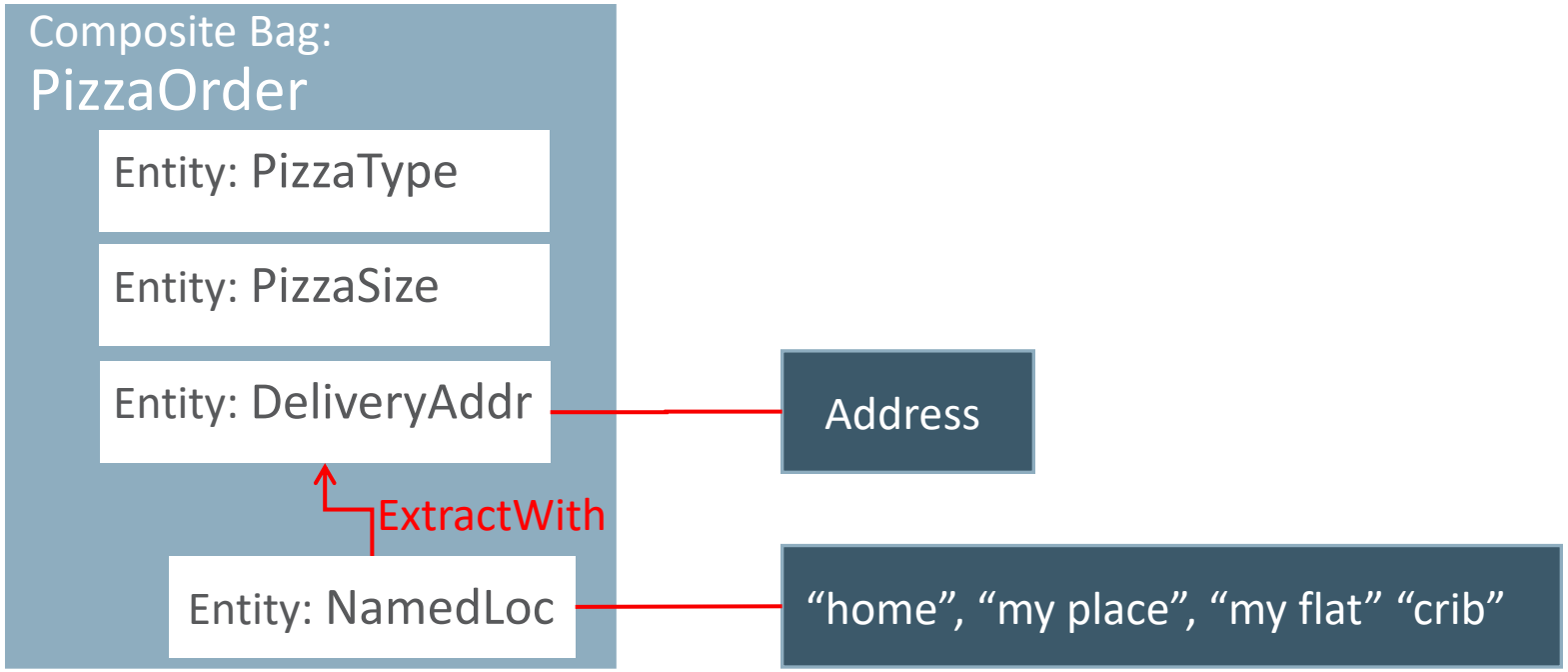
- Set prompt to false, then populate default in the dialog flow after resovleEntities




```
setPizzaDough:
  component: "System.SetVariable"
  properties:
    variable: "pizza.PizzaDough"
    # value set for the variable.
    value: "${pizza.value.PizzaDough?has_content?then(pizza.value.PizzaDough,'regular')}"
```

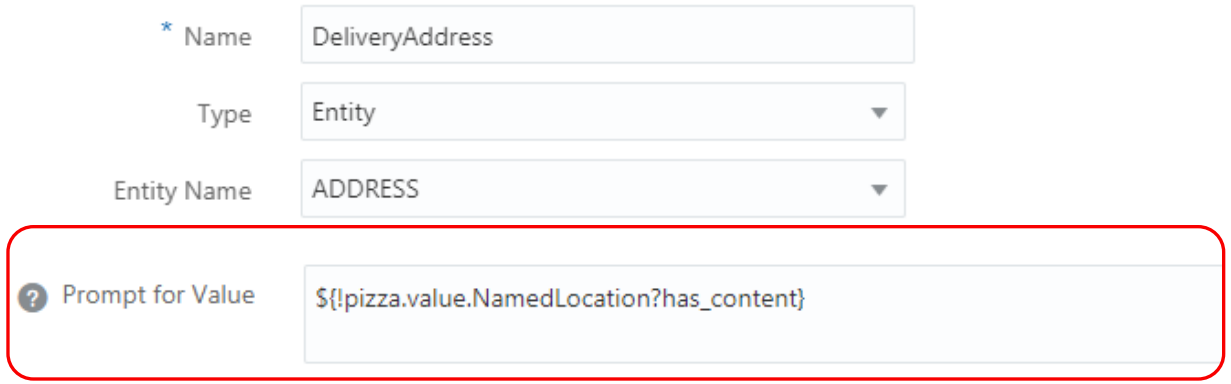
Allowing related terms for an entity value

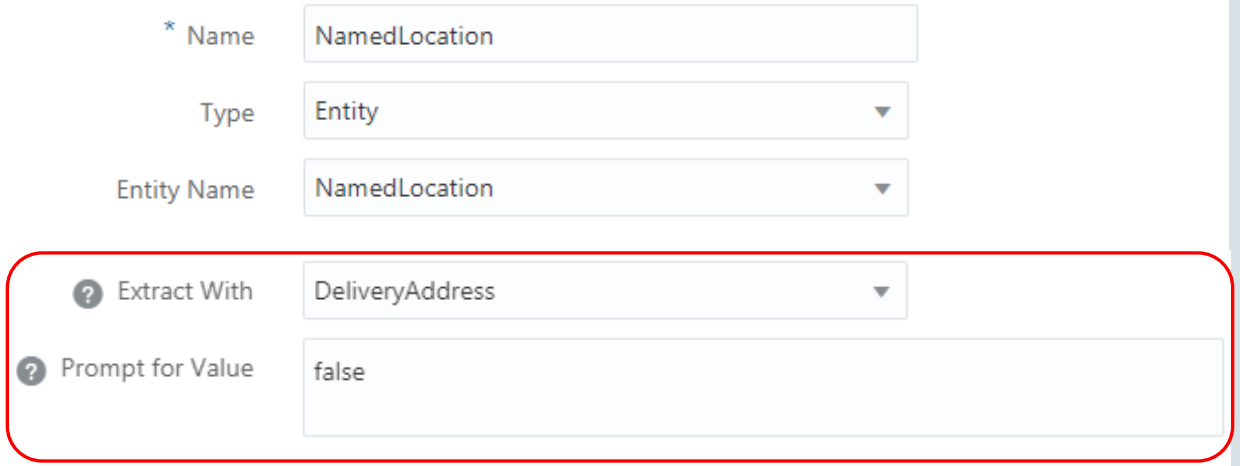
- User may answer in a way which is different from the expected entity value
- DeliveryAddress (primary) NamedLocation (secondary)
  - "What is the delivery address for your pizza" – "home delivery please"



Allowing related terms for an entity value

- Create NamedLocation entity add to bag
  - Don’t specifically prompt for secondary entity (Prompt for Value false)
  - Extract with Delivery Address
  - Only prompt for primary if secondary has no content





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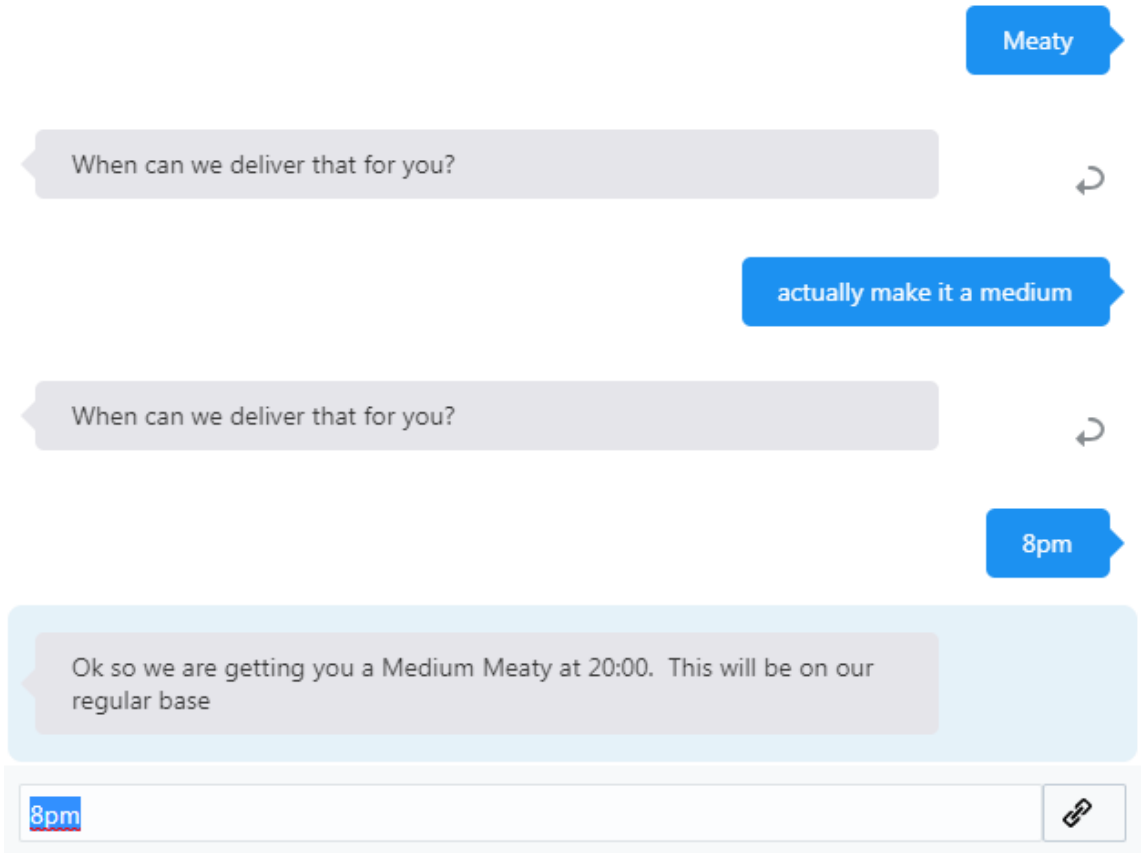
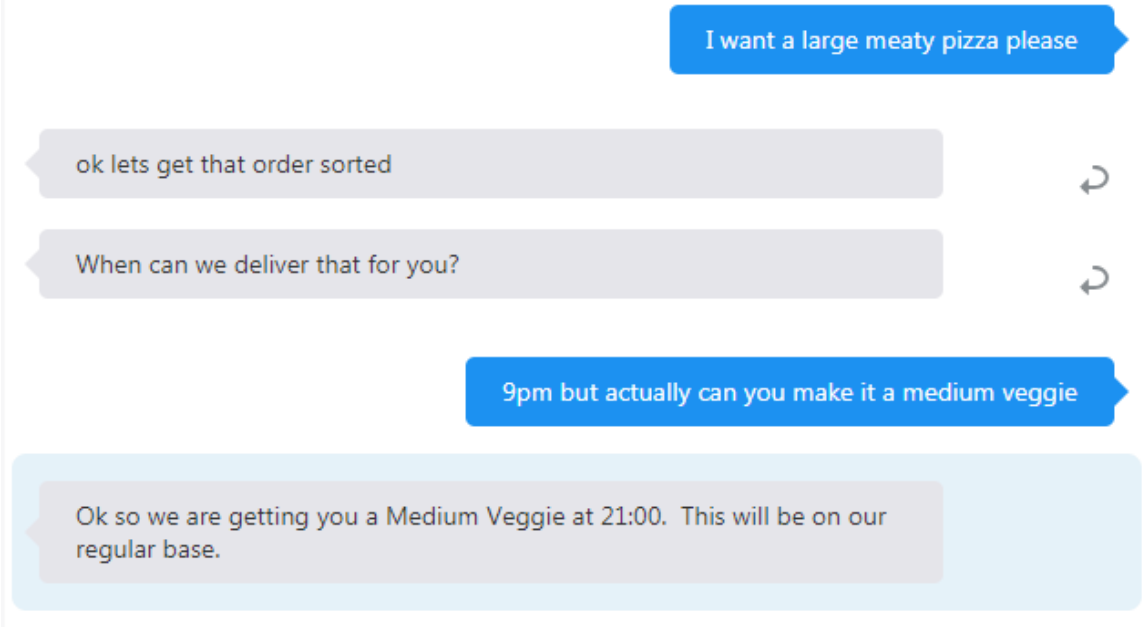
Slotting entities out of order

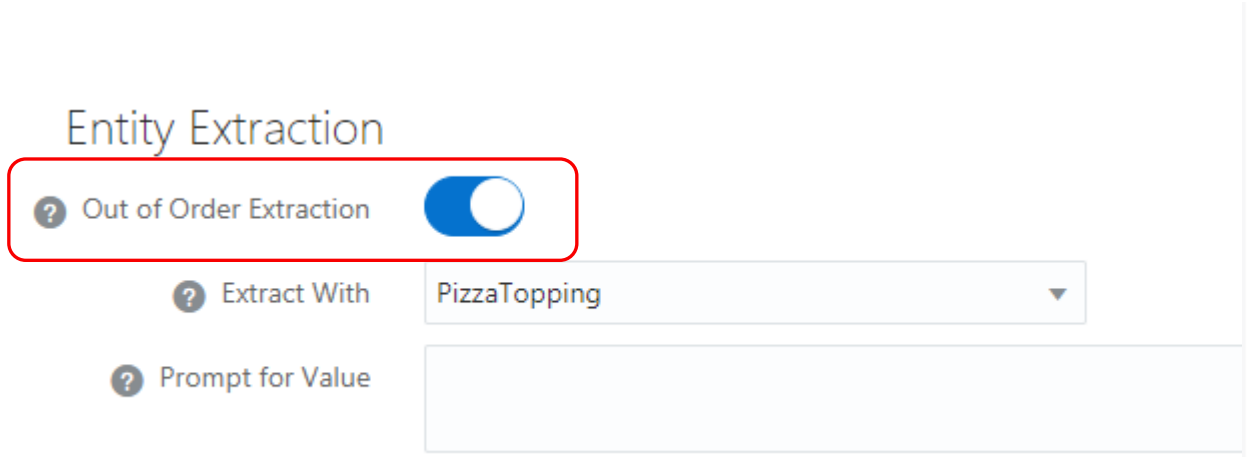
- Sometimes the user might supply a new entity value whilst awaiting a value for a different entity

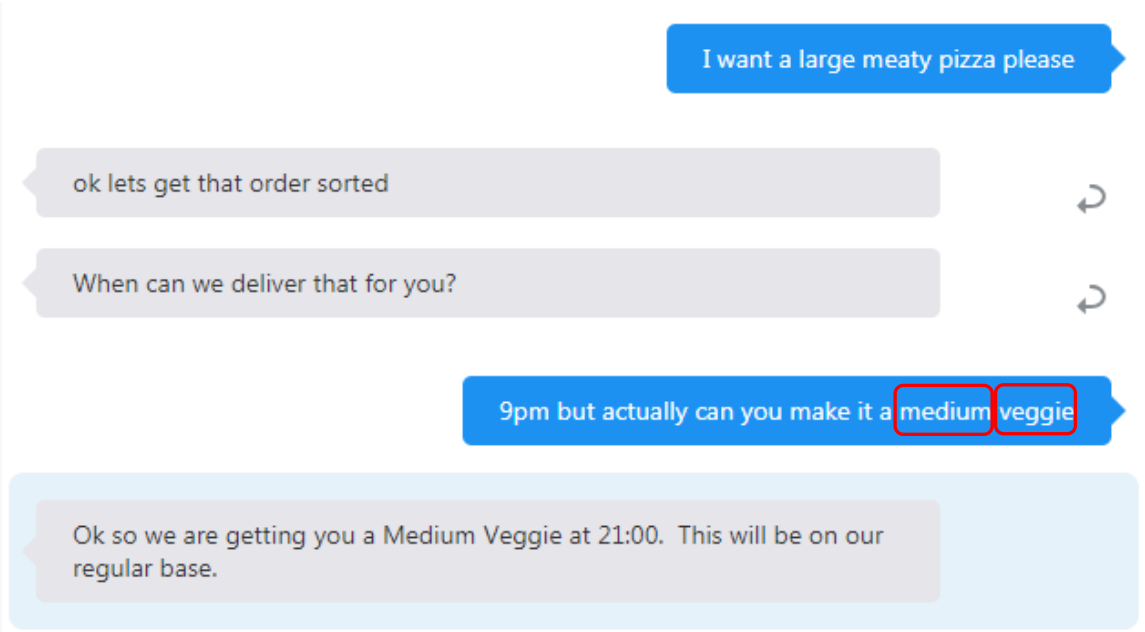




Slotting entities out of order

- If Out of Order Extraction is set, composite bag will resolve if it finds any entities of that type in any user input within resolveEntities
  - Would not work for string (as every input could be a string





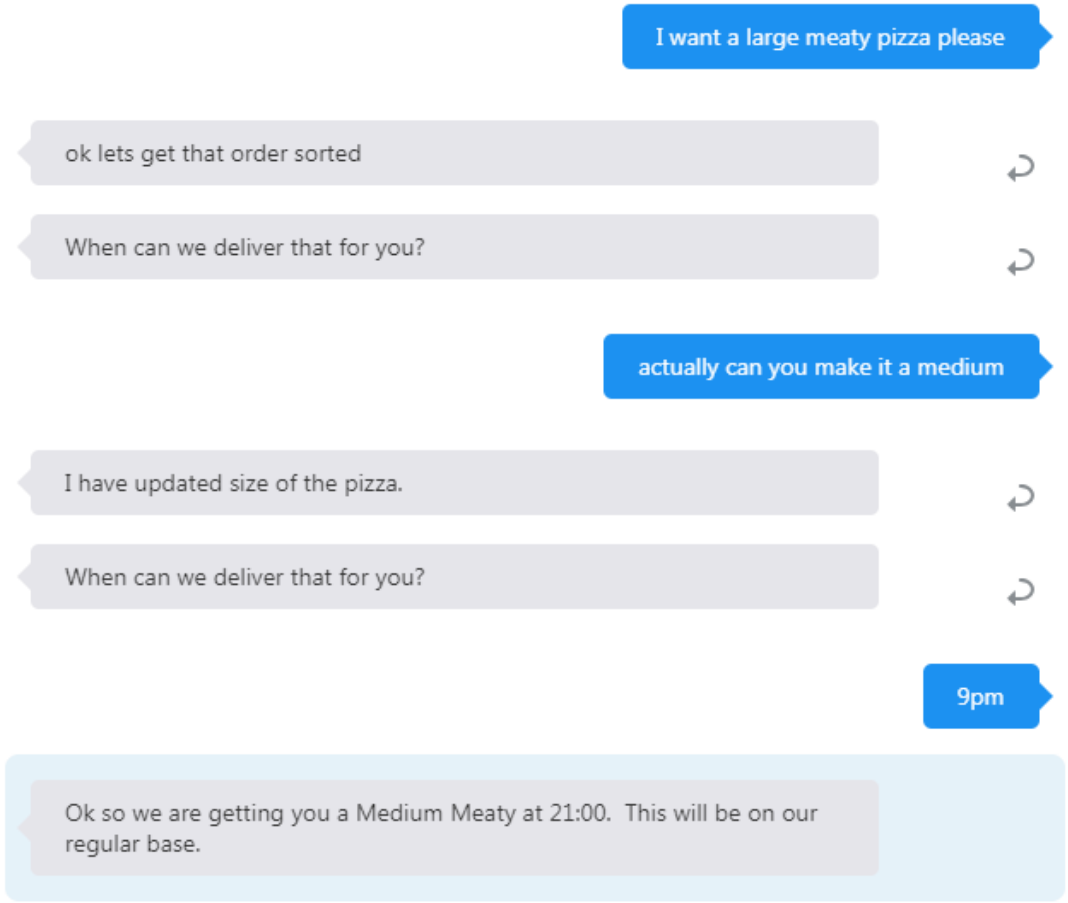
Slotting entities out of order

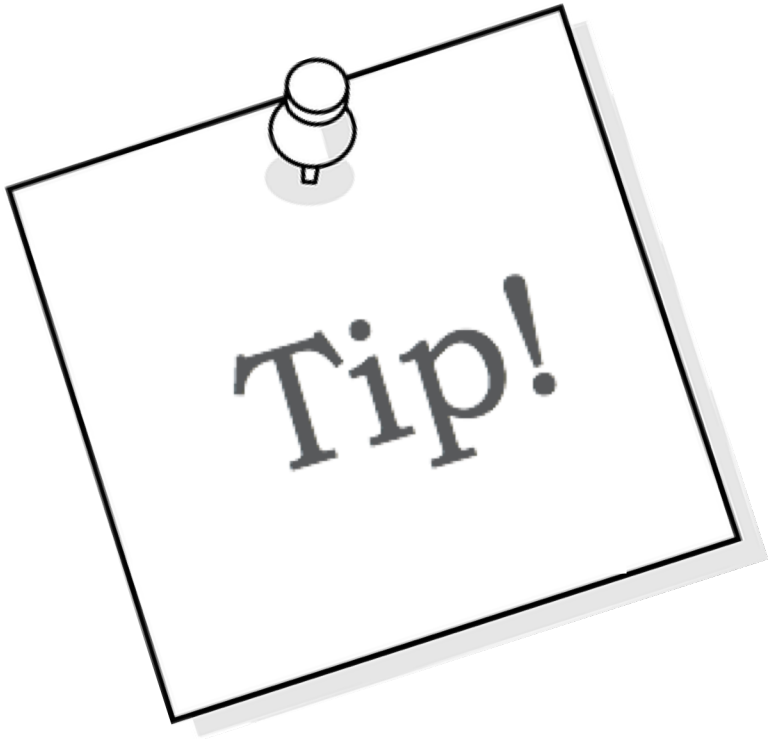
- Confirming to the user that the entity has changed

```
  resolveEntities:
    component: "System.ResolveEntities"
    properties:
      variable: "pizza"
      nlpResultVariable: "iResult"
      maxPrompts: 3
      cancelPolicy: "immediate"
      headerText: "<#list system.entityToResolve.value.updatedEntities>I have updated <#items as
ent>${ent.description}<#sep> and </#items>."
    transitions:
      actions:
        cancel: "maxError"
        next: "setPizzaDough"
```

Slotting entities out of order

```
        headerText: "<#list system.entityToResolve.value.updatedEntities>I have updated <#items as
ent>${ent.description}<#sep> and </#items>. </#list>"
```





Going forward, composite bag is your primary “go to” for entity resolution

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