ORACLE

Entities Best Practices Using Platform Features

Program Agenda

1 Best practices with composite bag entity

2 Best practices with other features

Program Agenda

1 **Best practices with composite bag entity**

2 Best practices with other features

Best practices with composite bag entity

What is a composite bag?

Composite bag entities represent domain objects

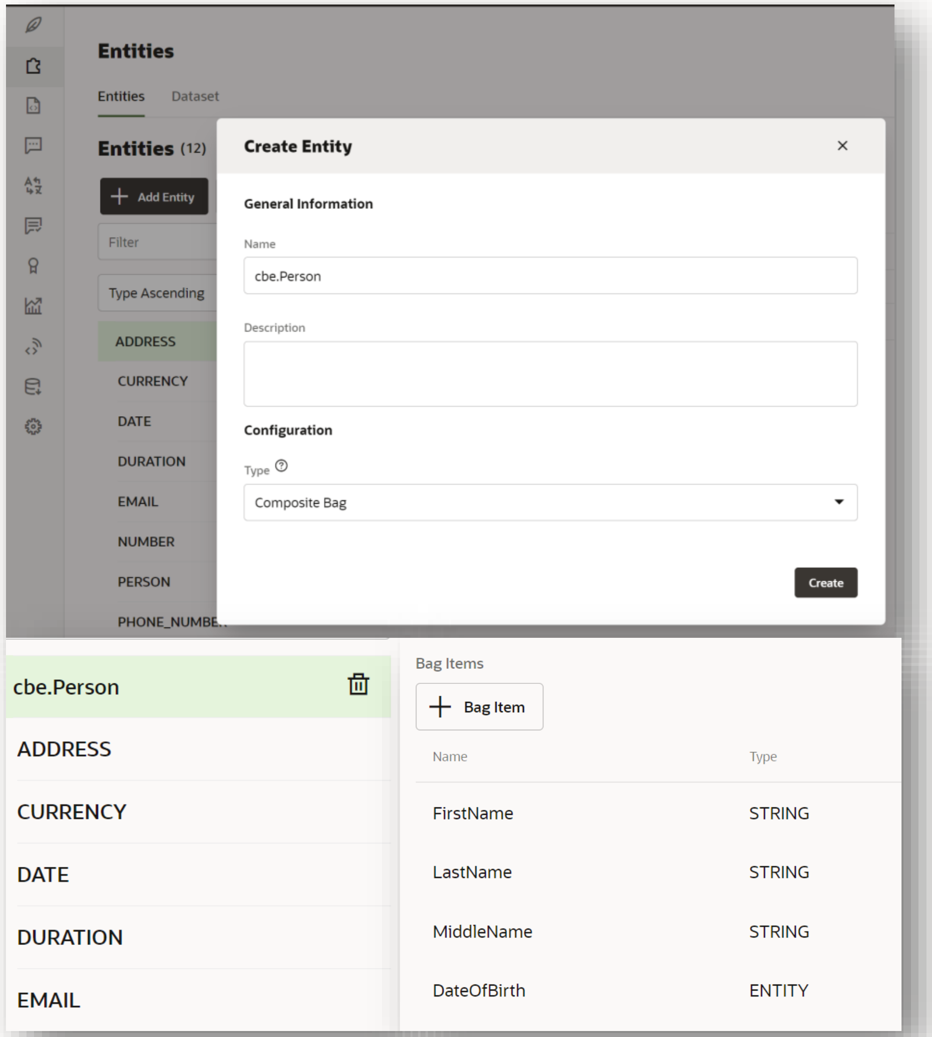
- person, order, product, booking, request etc.

Composed of bag items (attributes)

- Built-in entities
- Custom entities
- Dynamic entities
- String, location, attachment

All bag items get resolved by a single Visual Flow Designer component

- Resolve Composite Bag
- Resolve Entities



Name: cbe.Person

Description:

Type: Composite Bag

cbe.Person

ADDRESS

CURRENCY

DATE

DURATION

EMAIL

Name	Type
FirstName	STRING
LastName	STRING
MiddleName	STRING
DateOfBirth	ENTITY

Best practices with composite bag entity

> Always use composite bag entities

Composite bag is the most versatile and powerful entity available.

It simplifies the dialog design because it can resolve multiple entities together with less dialog states.

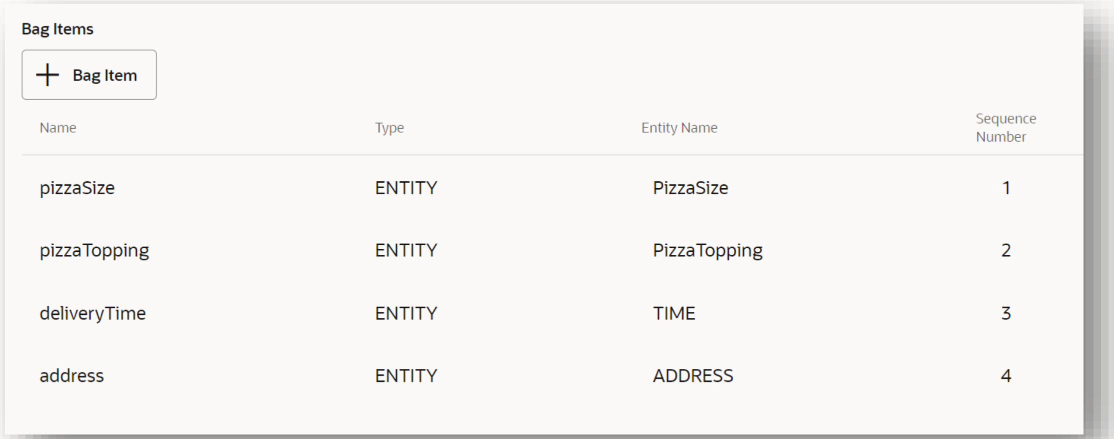
More easily allows entity slotting where there is validation and rule dependencies between entities

Wrap system entities to be able to set properties for them

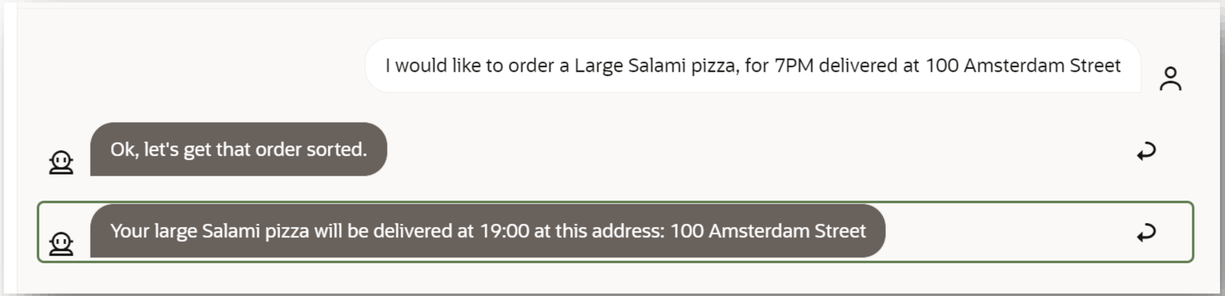
Best practices with composite bag entity

Multiple entity extraction

- A pizza order intent may have size, type, address, date, time and even more associated entities
- Composite bags allow to extract all together
- Only needed a Resolve Composite Bag component in the dialog flow.


Bag Items

Name	Type	Entity Name	Sequence Number
pizzaSize	ENTITY	PizzaSize	1
pizzaTopping	ENTITY	PizzaTopping	2
deliveryTime	ENTITY	TIME	3
address	ENTITY	ADDRESS	4


I would like to order a Large Salami pizza, for 7PM delivered at 100 Amsterdam Street

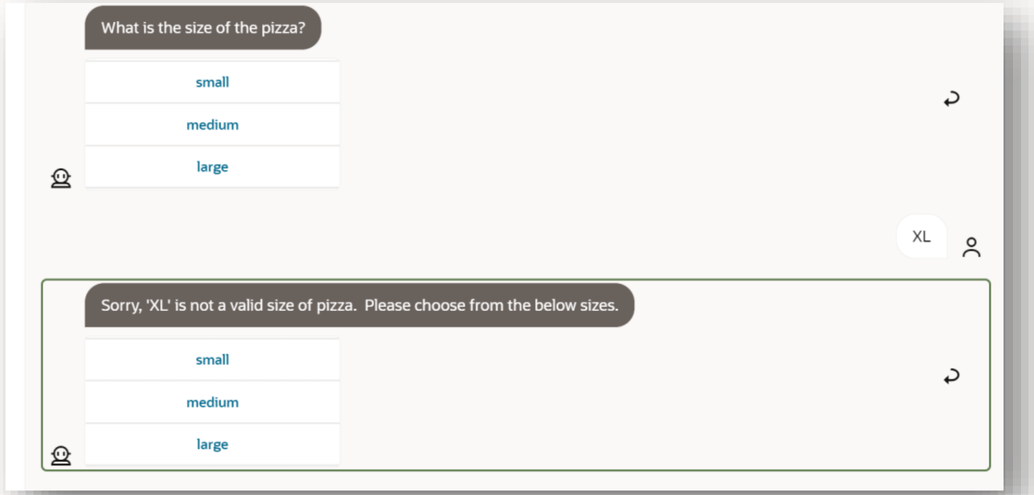
Ok, let's get that order sorted.

Your large Salami pizza will be delivered at 19:00 at this address: 100 Amsterdam Street

Best practices with composite bag entity

Validation

- We can validate the input against the entity type (email, URL, phone number etc.)
- Against a custom list of values, regular expression or a custom rule
- Validation error messages can be defined



What is the size of the pizza?

small

medium

large

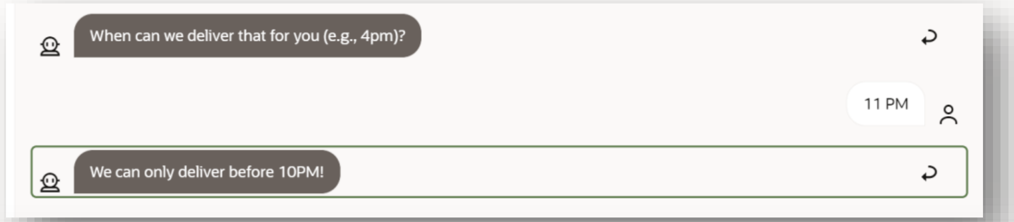
XL

Sorry, 'XL' is not a valid size of pizza. Please choose from the below sizes.

small

medium

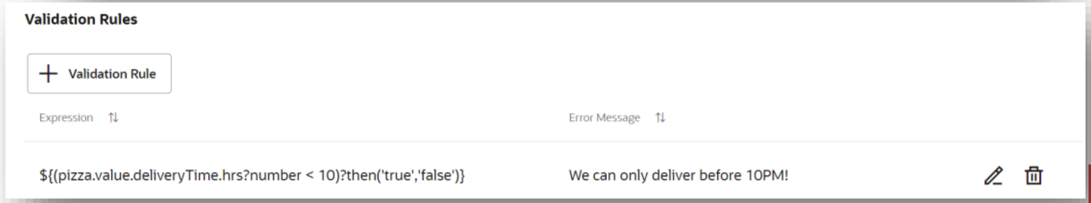
large



When can we deliver that for you (e.g., 4pm)?

11 PM

We can only deliver before 10PM!



Validation Rules

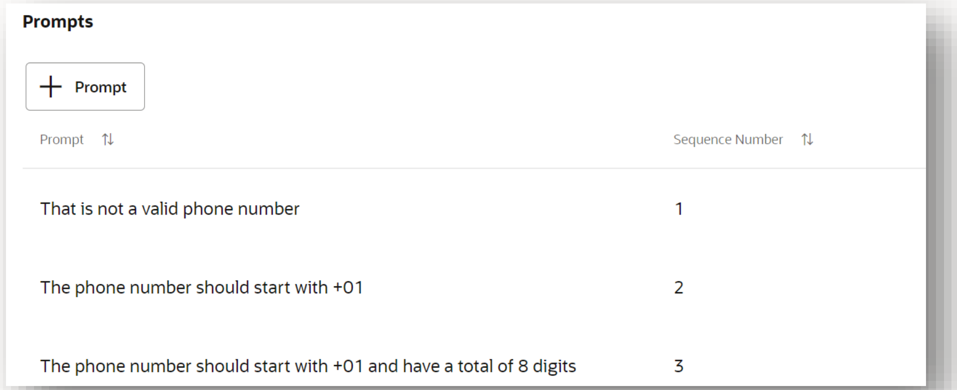
+ Validation Rule

Expression	Error Message
${(pizza.value.deliveryTime.hrs?number < 10)?then('true','false')}	We can only deliver before 10PM!

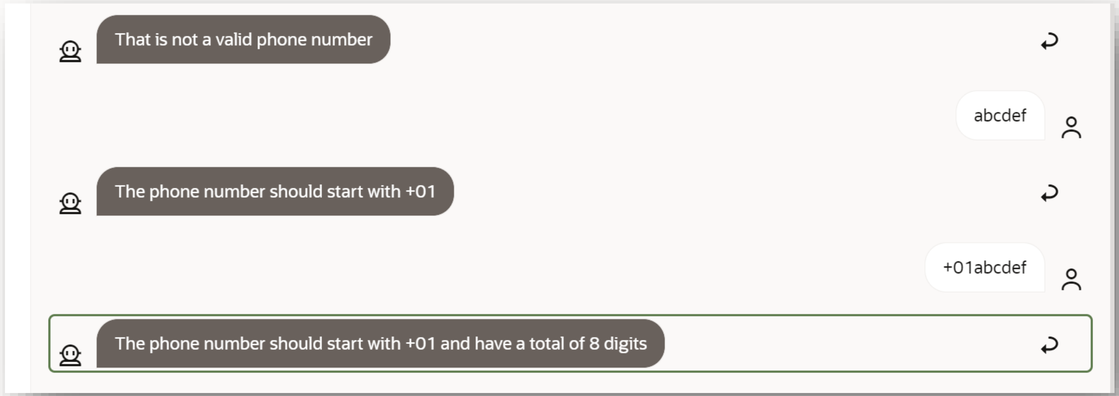
Best practices with composite bag entity

Error handling

- For failed validations, we can have prompt variation
- It is best practice to slowly disclose more information with each prompt
- Good designed prompts can help the user while maintaining a conversational tone


Prompts

Prompt	Sequence Number
That is not a valid phone number	1
The phone number should start with +01	2
The phone number should start with +01 and have a total of 8 digits	3


That is not a valid phone number

abcdef

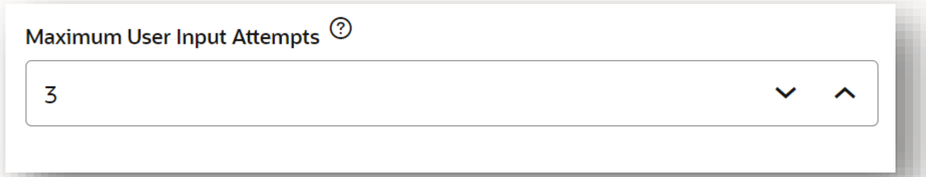
The phone number should start with +01

+01abcdef

The phone number should start with +01 and have a total of 8 digits

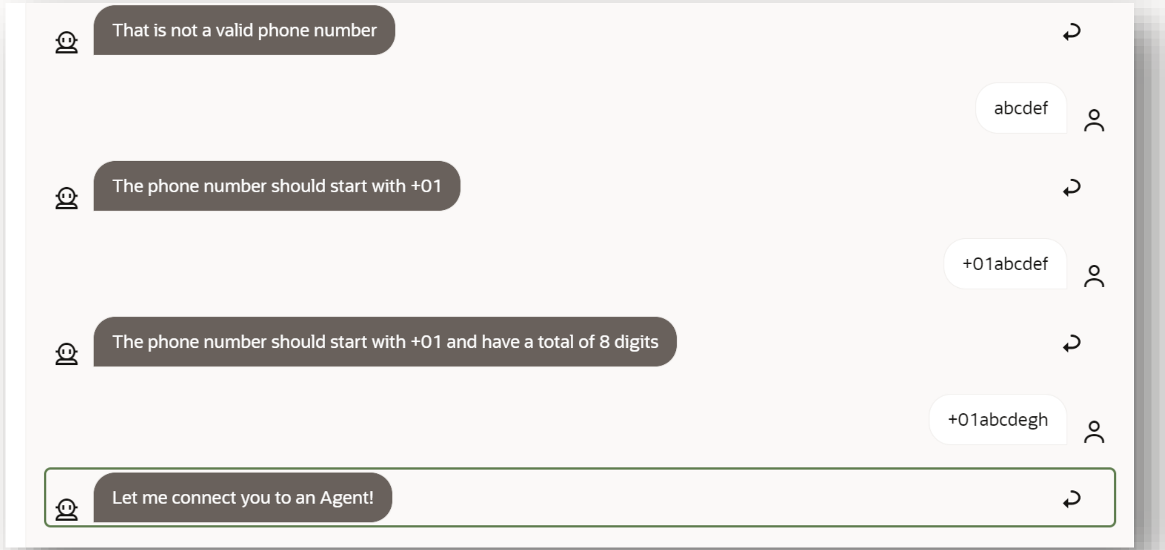
Best practices with composite bag entity

- Maximum prompts
  - We can define how many times we prompt the user for the input avoiding user lock
  - After which we should define a repair path with a transition to a different dialog state



Maximum User Input Attempts

3



That is not a valid phone number

abcdef

The phone number should start with +01

+01abcdef

The phone number should start with +01 and have a total of 8 digits

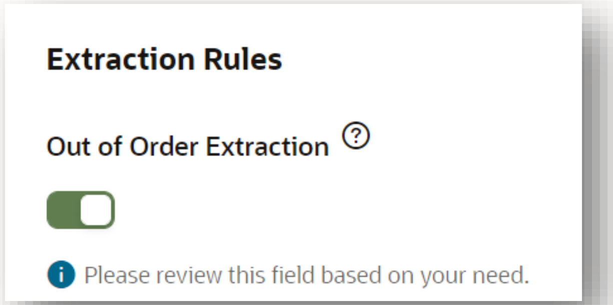
+01abcdegh

Let me connect you to an Agent!

Best practices with composite bag entity

Out-of-order extraction

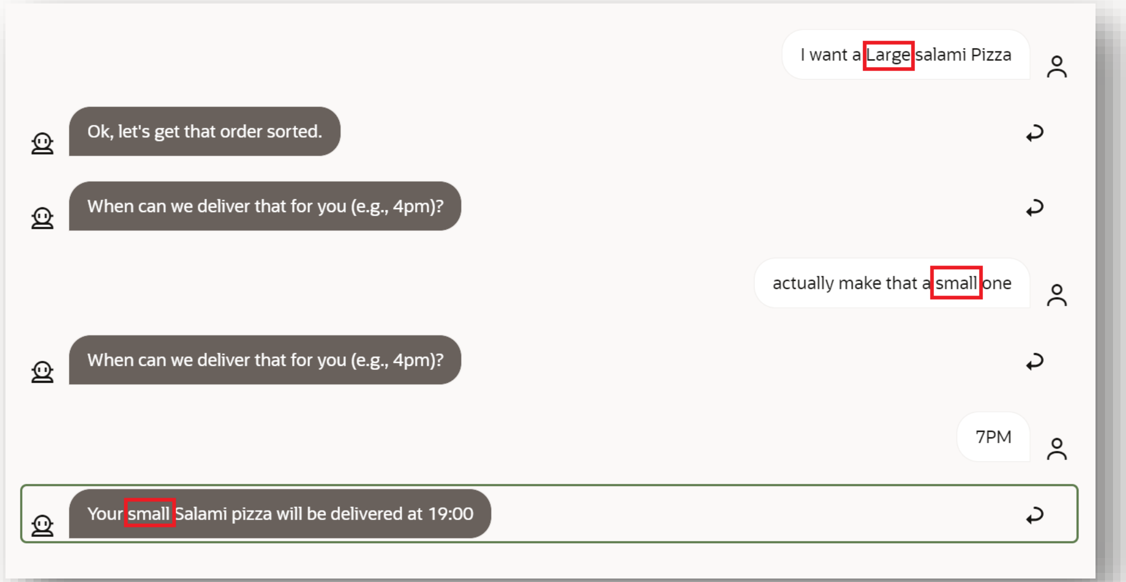
- Can be set at item level
- Values are slotted even when user is not prompted for it, or is prompted for a different entity value
- This allows us to solve a very common pattern in natural conversation



Extraction Rules

Out of Order Extraction

Please review this field based on your need.



I want a Large salami Pizza

Ok, let's get that order sorted.

When can we deliver that for you (e.g., 4pm)?

actually make that a small one

When can we deliver that for you (e.g., 4pm)?

7PM

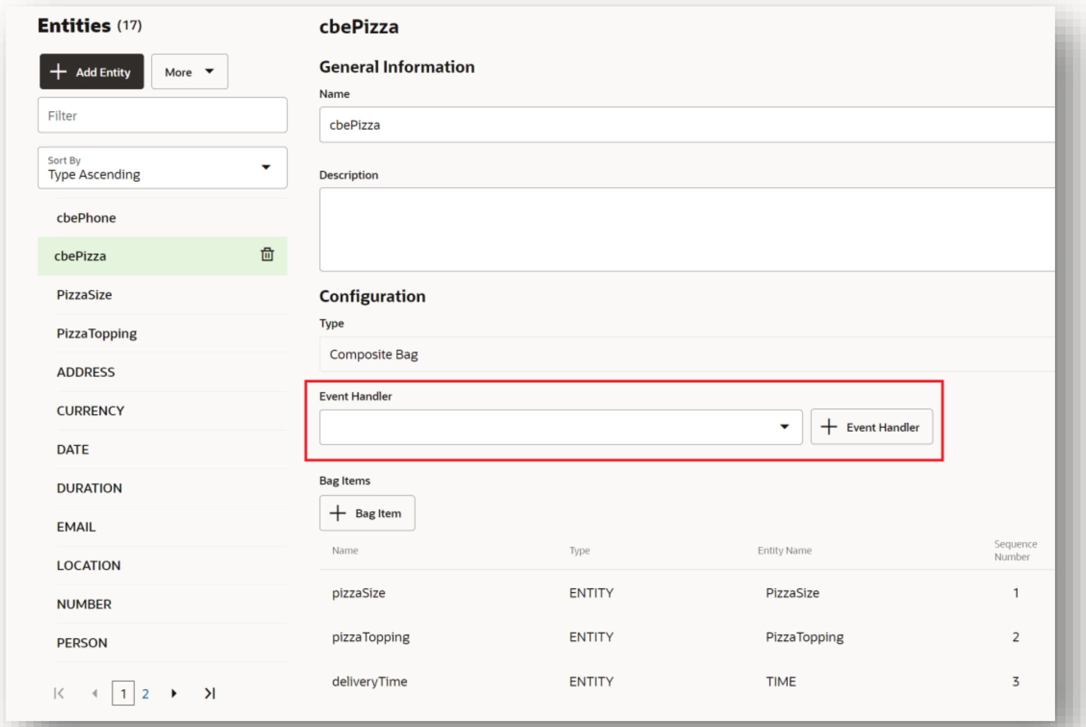
Your small Salami pizza will be delivered at 19:00

Best practices with composite bag entity

When to use entity event handlers

- Composite bags are powerful but may fall short when we need to:
  - Implement backend integration
    - Stock check during entity resolution (instead of doing that at the end)
  - Implement more complex business or validation logic
    - E.g. Very dependent on Apache FreeMarker expressions
  - Reference other composite bags

- Entity Event Handlers are the answer for this as they allow a programmatic approach to resolve the composite bag entity.



cbePizza

General Information

Name: cbePizza

Description:

Configuration

Type: Composite Bag

Event Handler:

Bag Items

Name	Type	Entity Name	Sequence Number
pizzaSize	ENTITY	PizzaSize	1
pizzaTopping	ENTITY	PizzaTopping	2
deliveryTime	ENTITY	TIME	3

Best practices with composite bag entity

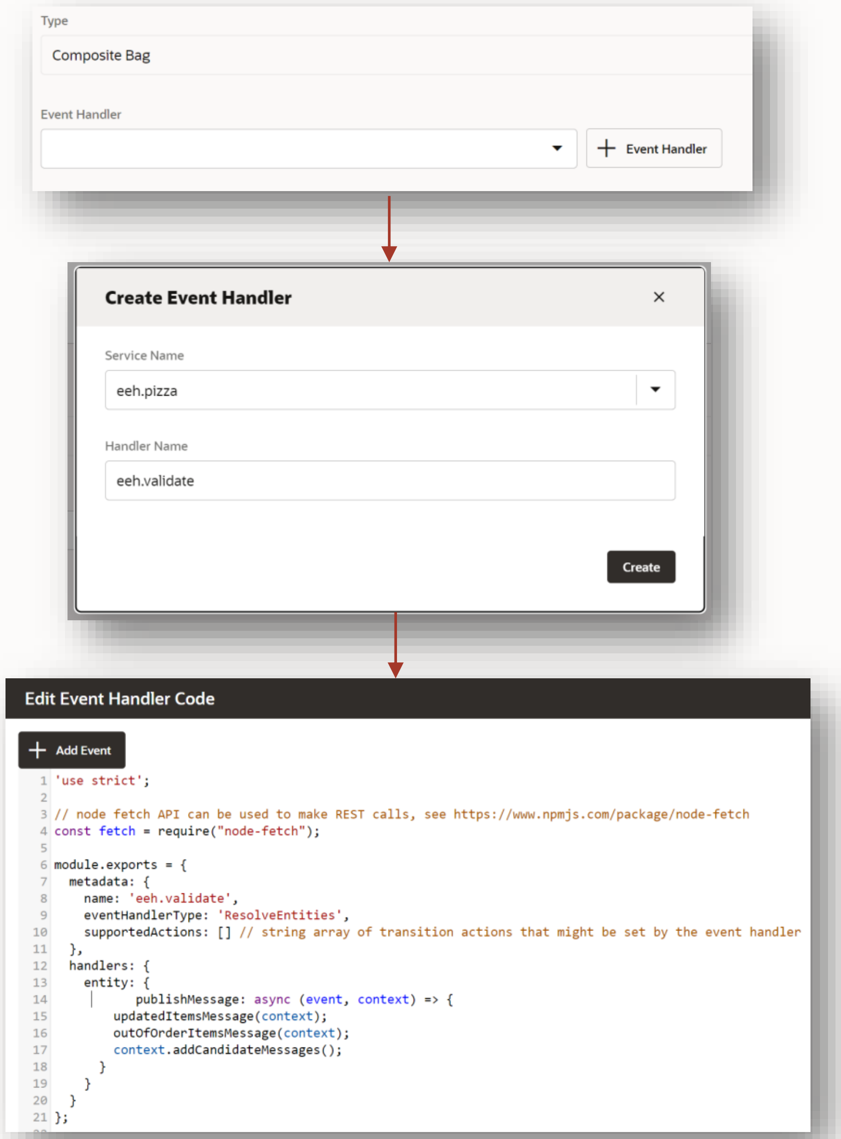
Entity event handlers

Complex validation

- With event handlers we no longer are limited to the Apache free marker expressions
- It also gives us the ability to cross reference other bag items

Backend Integration

- We can do backend checks during resolution, instead of having to do it in the next dialog step



Type: Composite Bag

Event Handler:

Create Event Handler

Service Name: eeh.pizza

Handler Name: eeh.validate

Edit Event Handler Code

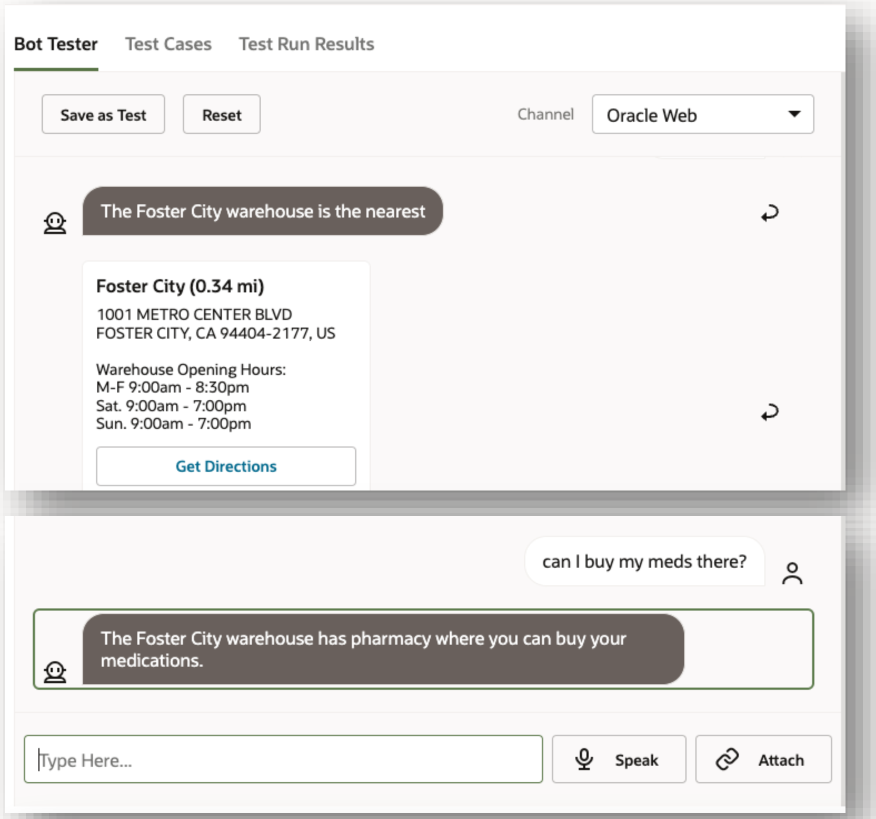
```
'use strict';

// node fetch API can be used to make REST calls, see https://www.npmjs.com/package/node-fetch
const fetch = require("node-fetch");

module.exports = {
  metadata: {
    name: 'eeh.validate',
    eventHandlerType: 'ResolveEntities',
    supportedActions: [] // string array of transition actions that might be set by the event handler
  },
  handlers: {
    entity: {
          publishMessage: async (event, context) => {
        updatedItemsMessage(context);
        outOfOrderItemsMessage(context);
        context.addCandidateMessages();
      }
    }
  }
};
```

Best practices with composite bag entity

Entity event handlers

Context awareness

- With entity event handlers we have the flexibility to handle more complex scenarios
- We can store context and use it to set following actions



The Foster City warehouse is the nearest

Foster City (0.34 mi)
1001 METRO CENTER BLVD
FOSTER CITY, CA 94404-2177, US

Warehouse Opening Hours:
M-F 9:00am - 8:30pm
Sat. 9:00am - 7:00pm
Sun. 9:00am - 7:00pm

can I buy my meds there?

The Foster City warehouse has pharmacy where you can buy your medications.

Program Agenda

1 Best practices with composite bag entity

2 **Best practices with other features**

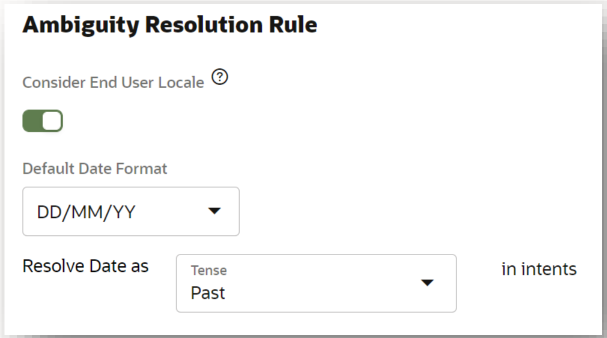
Best practices with other features

Date properties

- Date ambiguity
  - *"I want to book a flight for Monday"*
  - *"I want to create an expense for a meal I had Monday"*

We can easily define the Ambiguity Resolution Rule for Date Entity as *Past*, *Future* or *Nearest*.

- Date locale is another very typical parameter that we can set
  - DD/MM/YY or MM/DD/YY

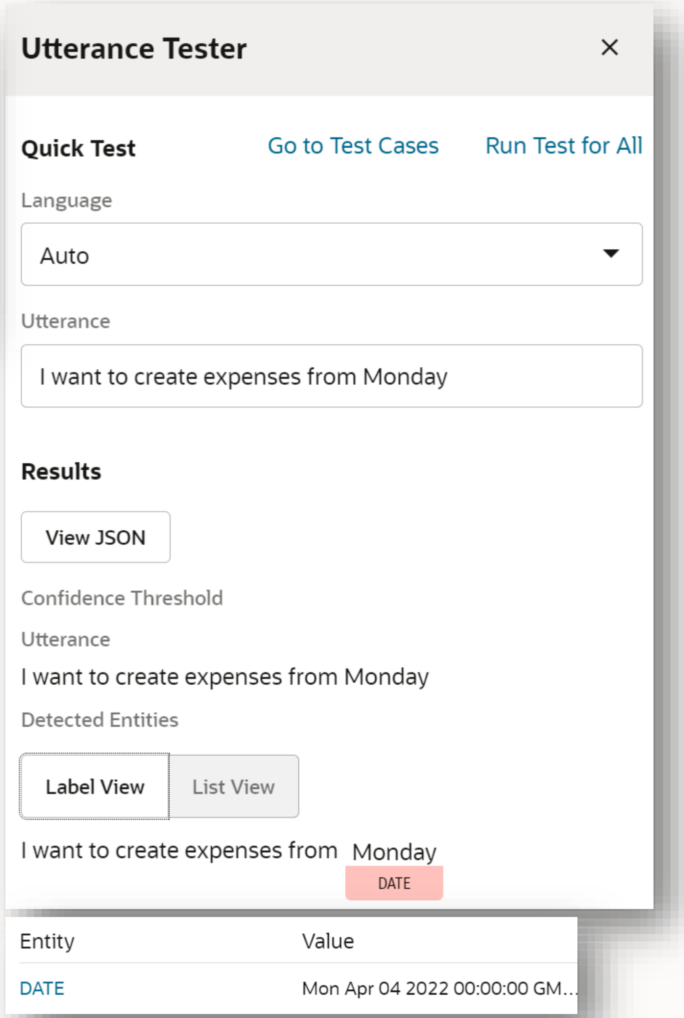


Ambiguity Resolution Rule

Consider End User Locale: on

Default Date Format: DD/MM/YY

Resolve Date as Tense: Past in intents



Utterance Tester

Quick Test — Go to Test Cases — Run Test for All

Language: Auto

Utterance: I want to create expenses from Monday

Results

View JSON

Confidence Threshold

Utterance

I want to create expenses from Monday

Detected Entities

Label View | List View

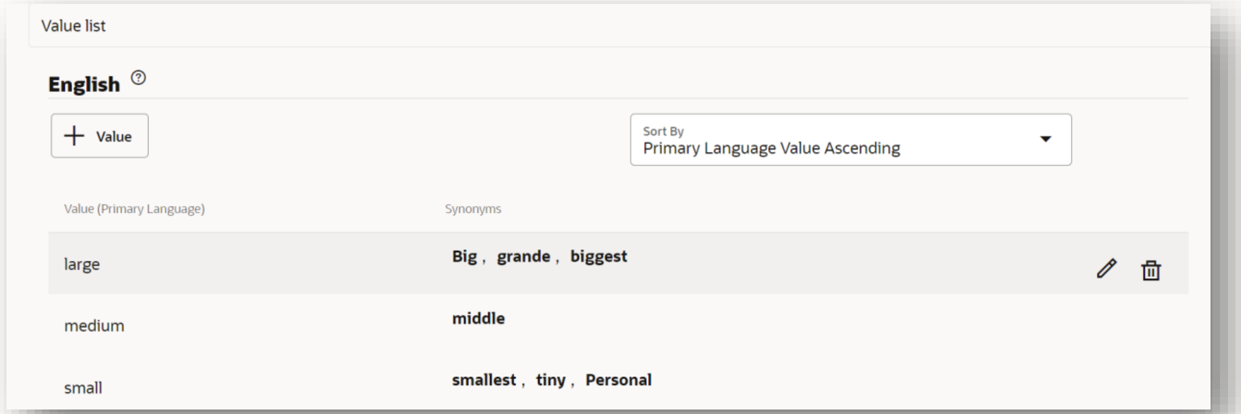
I want to create expenses from Monday (DATE)

Entity	Value
DATE	Mon Apr 04 2022 00:00:00 GM...

Best practices with other features

Value list properties

- Always use synonyms with value lists
- It increases accuracy
- Can be used to build entity based robust action menus
  - Entity validation
  - Prompts



Value list

English

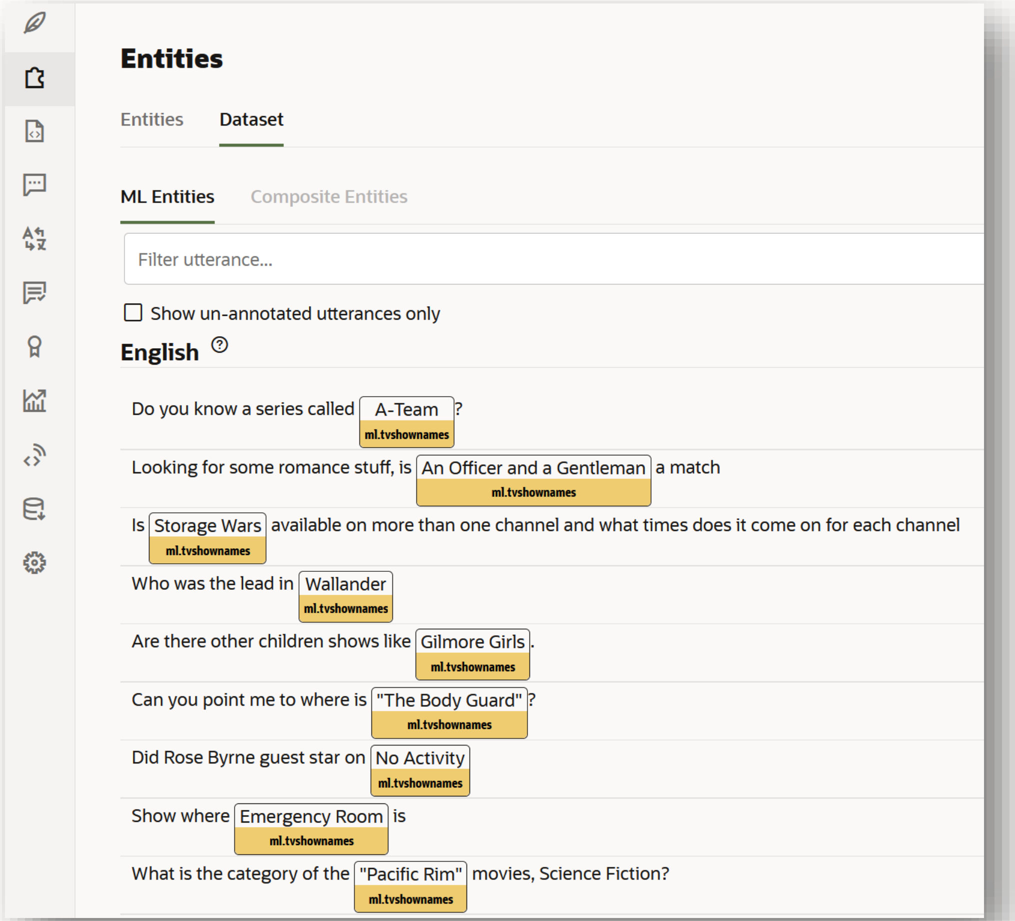
Sort By
Primary Language Value Ascending

Value (Primary Language)	Synonyms
large	Big , grande , biggest
medium	middle
small	smallest , tiny , Personal

Best practices with other features

Machine learning entity

- ML entities extract known and unknown values from an infinite list of options
- Use this entity when you have a use case for which you cannot know all the possible values



Entities

Entities | Dataset

ML Entities | Composite Entities

Filter utterance...

☐ Show un-annotated utterances only

English

Do you know a series called [A-Team ml.tvshownames]?

Looking for some romance stuff, is [An Officer and a Gentleman ml.tvshownames] a match

Is [Storage Wars ml.tvshownames] available on more than one channel and what times does it come on for each channel

Who was the lead in [Wallander ml.tvshownames]

Are there other children shows like [Gilmore Girls ml.tvshownames].

Can you point me to where is ["The Body Guard" ml.tvshownames]?

Did Rose Byrne guest star on [No Activity ml.tvshownames]

Show where [Emergency Room ml.tvshownames] is

What is the category of the ["Pacific Rim" ml.tvshownames] movies, Science Fiction?

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