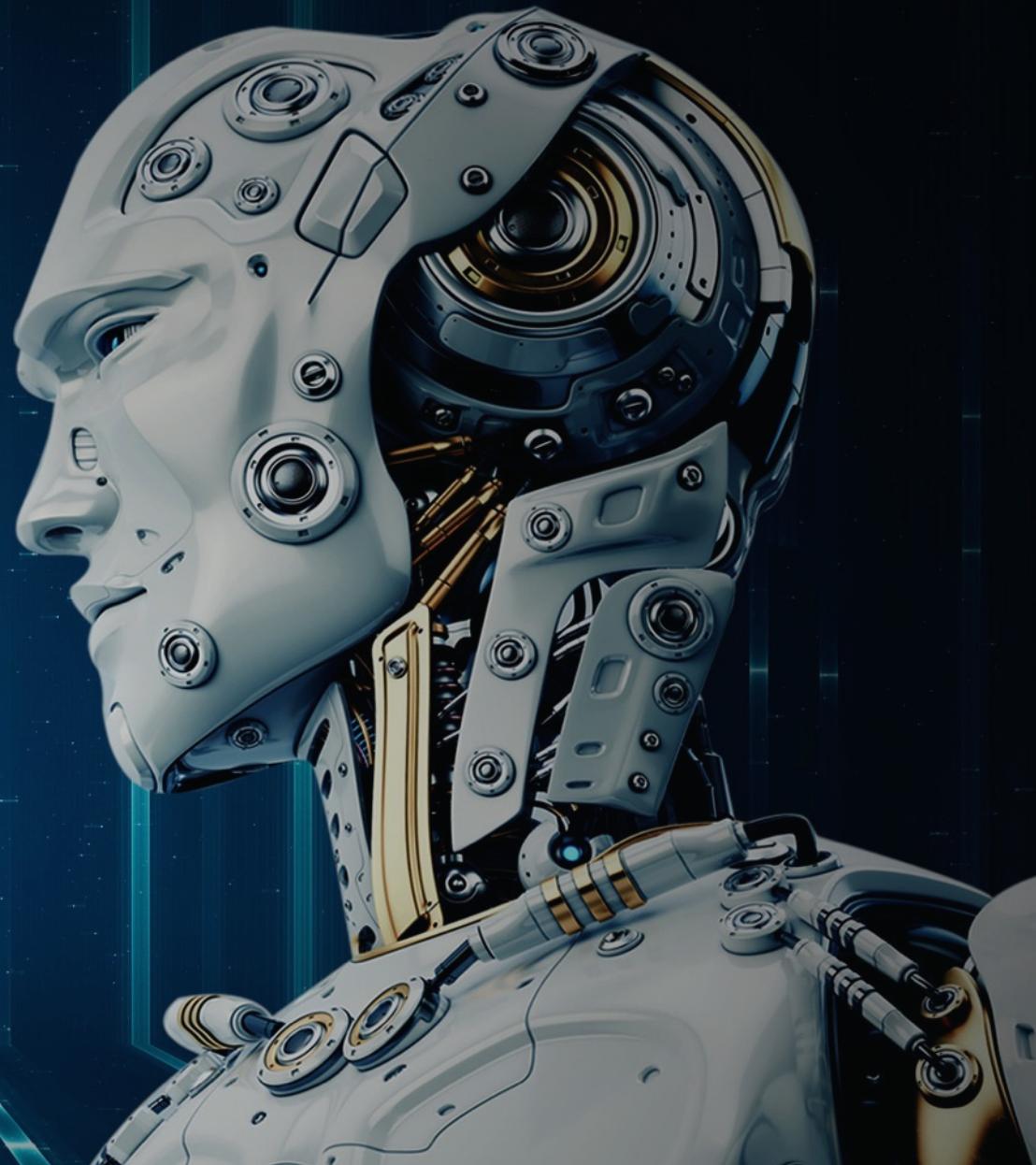


ORACLE®

Oracle Intelligent Bots Advanced Training

Multi Language Support



Safe Harbor Statement

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Topic Agenda

- 1 ➤ Oracle's Approach
- 2 ➤ Configuration
- 3 ➤ System Components
- 4 ➤ Message Bundles
- 5 ➤ Custom Components
- 6 ➤ Strategies & Practices

Two Approaches to Building Multi-Language Bots

Native Language Bots

- Use a specific language for
 - Utterances
 - Entities
 - Prompts, titles, descriptions
- Each bot uses language specific intent and entity recognition engine
- Bot training and testing in specific language

Single Base-Language Bots

- Serve multiple languages from a single base language
 - Utterances
 - Entities
 - Prompts, titles, descriptions
- Uses translation service
 - Prompts are translated at runtime to detected user language
 - User input translated to base language
- Only "appears" as native language

Oracle Intelligent Bot Language Support

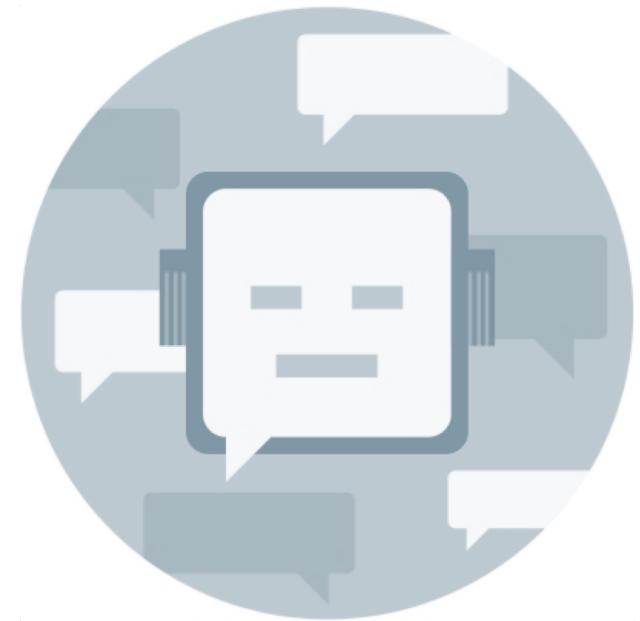
Current Approach

- Bot is built in English
- 3rd-party Translation Services
 - Translate user input to English
 - Translate bot responses to user language
- Used for intent resolution and entity extraction
 - Utterances and entity values are in English
- Applied globally or to individual components

Why it works.

**“If no mistake have you made, yet
losing you are ... a different game
you should play”**

- Yoda, Star Wars



Multi Language Support

Configuration

Setup

- Uses Google Translation API or Microsoft Translator Services
- Bring your own license
 - Authorization Token / Key
- Translation Service used for both runtime input and output

The screenshot shows the Oracle Mobile Cloud Enterprise Bots interface. At the top, there's a navigation bar with the Oracle logo, 'Mobile Cloud Enterprise', and various buttons like 'Instant Apps', 'Take a Tour', 'Import Bot', and 'AC'. A green arrow points down from the 'Translation Services' button in the top right to a modal dialog box titled 'Translation Services'. The dialog contains fields for 'Service Type' (set to 'Google'), 'Base URL *' (set to 'https://translation.googleapis.com/language/translate/v2'), and 'Authorization Token *' (a redacted token). There are also 'Optional HTTP Headers' and 'Reset' buttons.

Enable Translation Service for Bot

- Reference a translation service configuration from a bot to use auto-translation

The screenshot shows the Oracle Bot Service interface. At the top, a blue header bar displays the title "MultiLanguageBot". Below the header, there are four tabs: "General" (which is selected), "Channels", "Agent Integrations", and "Q&A Routing Config". On the left side, there is a vertical sidebar with several icons: a flag, a document, a speech bubble, a document with a gear, a question mark, a checkmark, and a grid. The main content area contains fields for "Name" (set to "MultiLanguageBot") and "Description". Under the "Training Model" section, there is a dropdown menu set to "Trainer Ht". In the "Translation Service" section, there is a dropdown menu with three options: "None", "None", and "Google". The "Google" option is highlighted with a gray background, indicating it is selected.

**Enabling auto-translation, translates
user messages and bot responses
for the detected user language**



Enabling / Disabling Auto-Translation

- Auto-translation is disabled by default
- Can be enabled / disabled at any time
 - Define "autoTranslate" context variable of type boolean
 - Set variable value to true
- When enabled
 - User messages are translated to English
 - Bot messages are translated to user language

```
variables:  
  autoTranslate: "boolean"  
  ...  
states:  
  ...  
enableAutotranslation:  
  component: "System.SetVariable"  
properties:  
  variable: "autoTranslate"  
  value: true  
transitions: {}
```

Translation Strategies

Opt-in

- Disable auto-translation
- Detect user languages
 - From user message
 - From profile
- Enable auto-translation on component
- Use message bundles

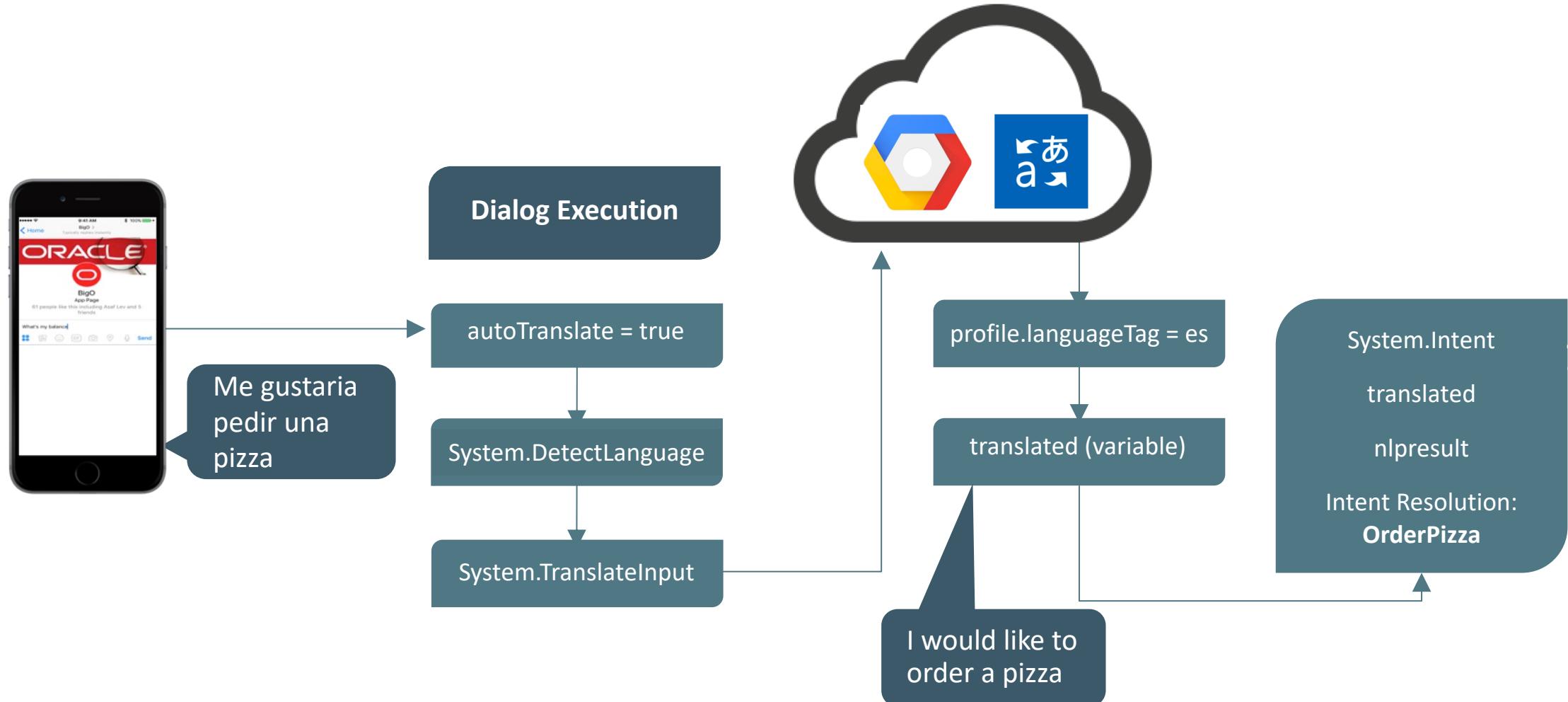
Opt-out

- Enable auto-translation
- Detect user languages
 - From user message
 - From profile
- Test bot
- Disable translation on individual components and use message bundles instead

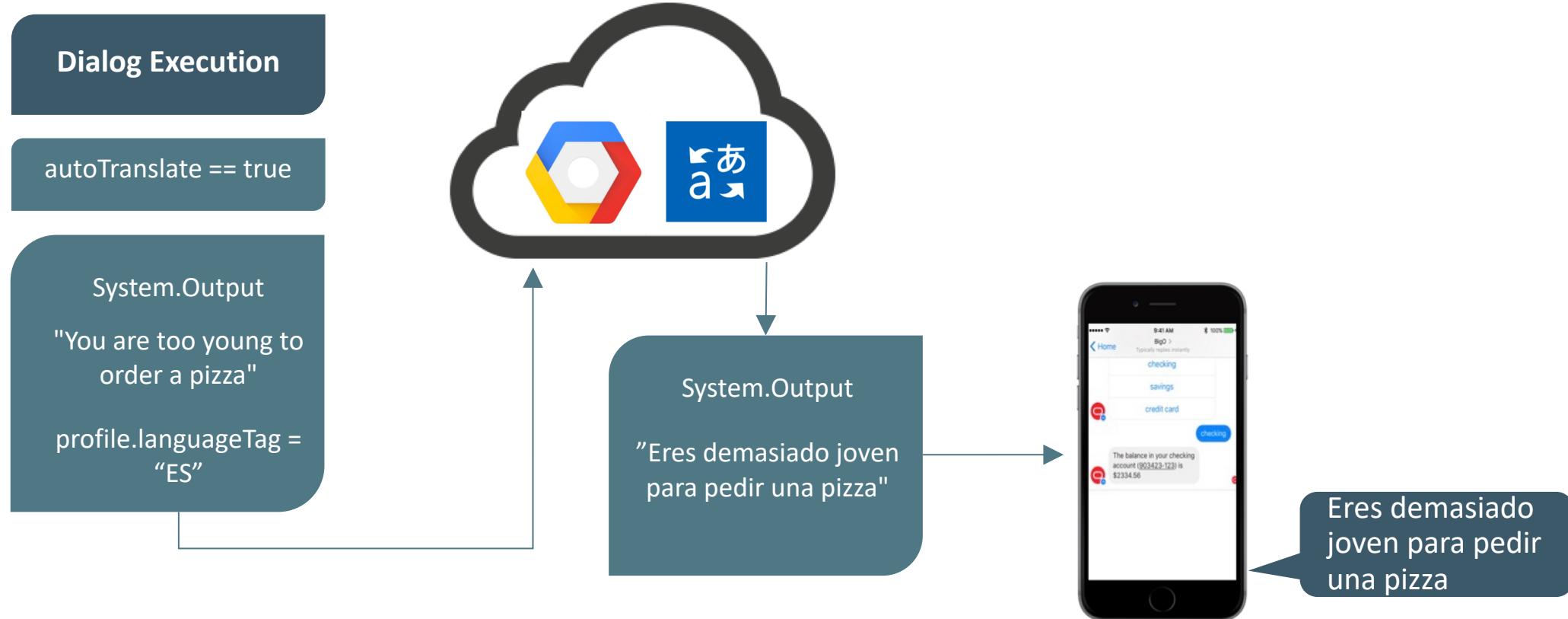
Multi Language Support

System Components

User Input Translation at Runtime



Bot Response Translation at Runtime



System.DetectLanguage

- Uses translation service to detect user language based on a provided input string
- Sets the "profile.languageTag" system variable to locale code of the detected user language
- Precedes value in "profile.locale" variable set by messenger client

Example 1

```
detectLanguageFromDirectInput:  
    component: "System.DetectLanguage"
```

Example 2

```
context:  
    variables:  
        sourceString: "string"  
        ...  
    states:  
        ...  
detectLanguageFromSourceVariable:  
    component: "System.DetectLanguage"  
    properties:  
        source: "sourceString"
```



What if the user does not enter text for the bot to detect the user language?

In this case your bot could use the language of the messenger client.



Manually setting the "profile.languageTag"

- The `profile.locale` variable holds the language setting of the messenger client
- Optional, but recommended, set the value of `profile.languageTag` to the value of `profile.locale`
- Alternatively, have the user selecting a language from a list or read it from a custom profile you maintain for users
 - Set `profile.language` variable

```
states:  
  setLanguageToUserDefault:  
    component: "System.SetVariable"  
    variable: "profile.languageTag"  
    value: "${profile.locale}"
```

System.TranslateInput

- Translates strings to English
 - Leverages translation service
 - **String input from direct user input**
 - String from context variable

Example 1

```
context:  
    variables:  
        englishString: "string"  
        ...  
states:  
    ...  
translateInput:  
    component: "System.TranslateInput"  
properties:  
    variable: "englishString"
```

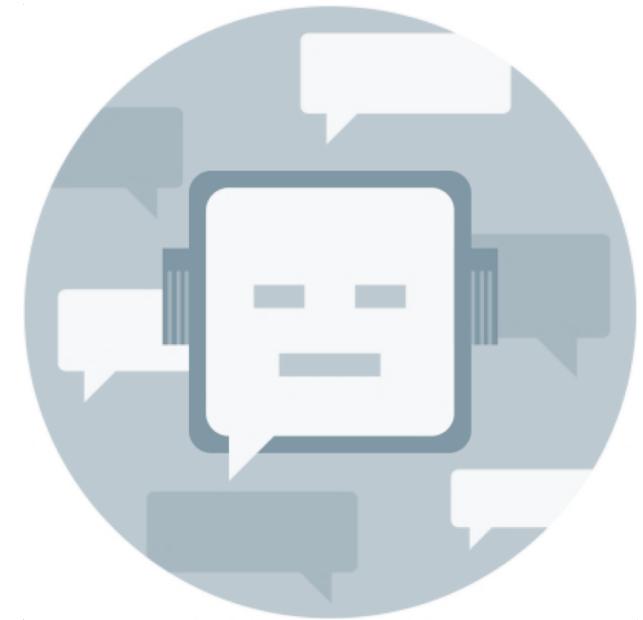
System.TranslateInput

- Translates strings to English
 - Leverages translation service
 - String input from direct user input
 - **String input from context variable**

Example 2

```
context:  
  variables:  
    englishString: "string"  
    sourceString: "string"  
    ...  
states:  
  ...  
  translateInputString:  
    component: "System.TranslateInput"  
    properties:  
      source: "sourceString"  
      variable: "englishString"
```

**System.TranslateInput translates
strings, no objects.**



System.TranslateOutput

- Translates any string to the language detected for a user
 - profile.languageTag
 - profile.locale

Example

```
context:  
    variables:  
        translatedString: "string"  
        sourceString: "string"  
    ...  
states:  
    ...  
translateOutputString:  
    component: "System.TranslateOutput"  
properties:  
    source: "sourceString"  
    variable: "translatedString"
```

Component "translate" Property

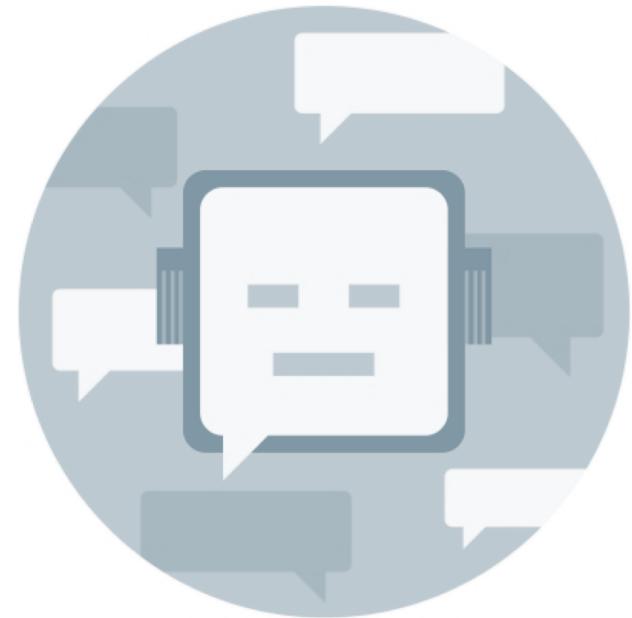
- Available on user interface and input components
 - Intent, Text, Output, List, CommonResponse
- Overrides the global auto-translate setting

```
statename:  
  component: "System.Text"  
  properties:  
    ...  
    translate: true  
    ...
```

Multi Language Support

Resource Bundles

**Resource bundles in Oracle Intelligent Bots
don't require a translation service.**



User Profile Variables

- `profile.locale`
 - Set by the messenger client used
- `profile.languageTag`
 - Usually set by `System.DetectLanguage` component
 - Can be set manually using `System.SetVariable`
 - Precedes `profile.locale` setting

Creating a Resource Bundle

The screenshot shows a user interface for managing a bot's resources. On the left, there is a vertical sidebar with icons for different settings: a flag, three horizontal lines, a speech bubble, a document with a globe, a question mark in a speech bubble, and a checkmark with a dropdown arrow. The main area displays a message: "You haven't defined any resource bundles for this bot." Below this message is a subtitle: "You can localize your bot's messages using resource bundles." A blue link labeled "Tell me more" is present. At the bottom right is a green button with a white plus sign and the text "Bundle".

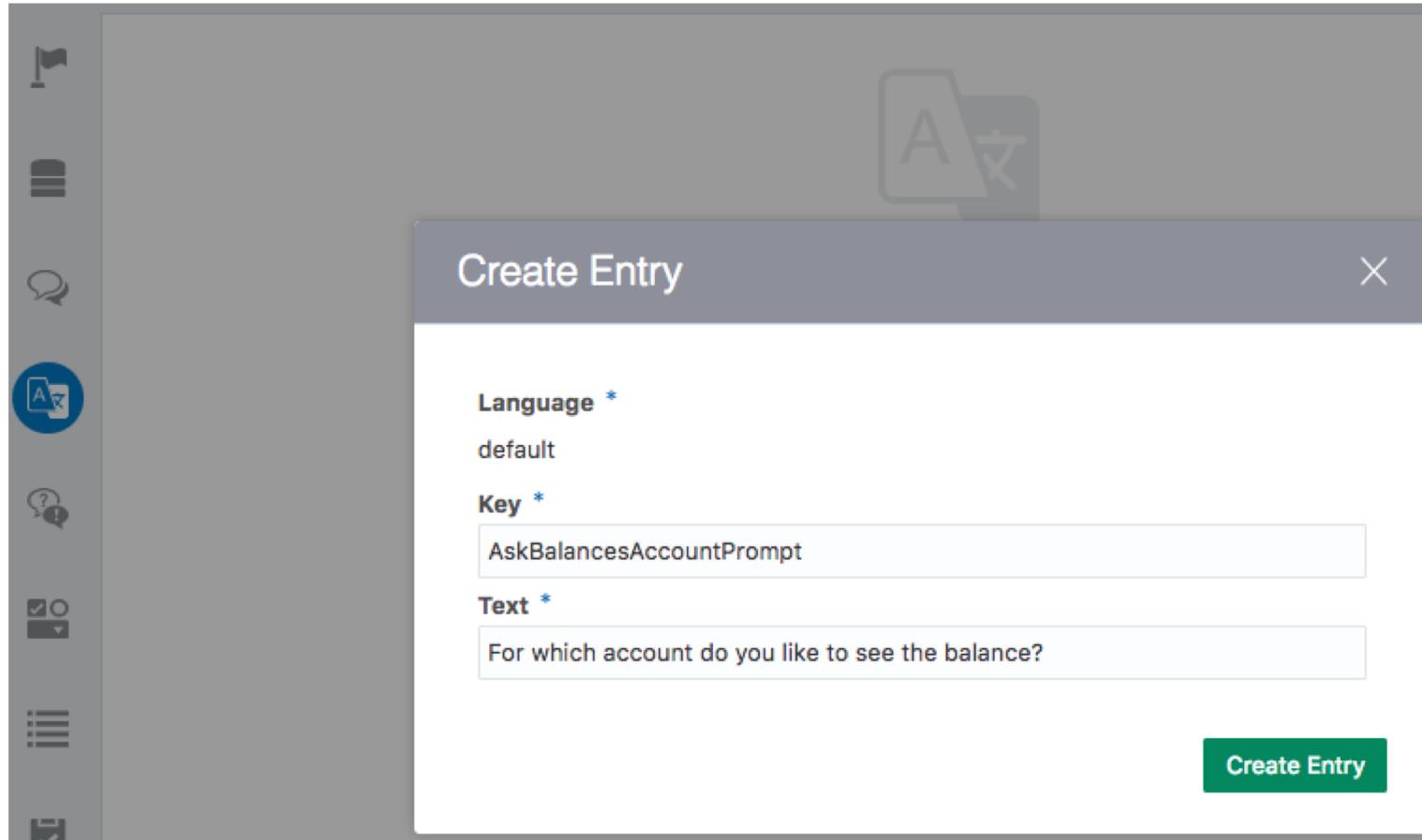
You haven't defined any resource bundles for this bot.

You can localize your bot's messages using resource bundles.

[Tell me more](#)

+ Bundle

Defining a Default Language Key and String



Create Translations

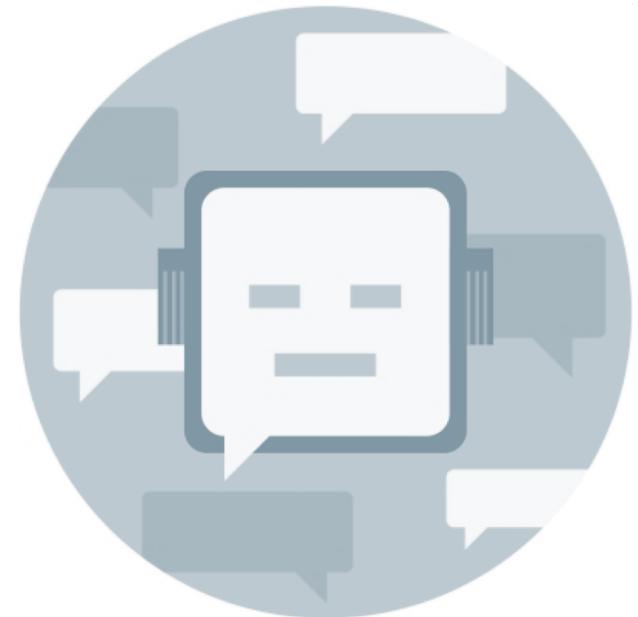
The screenshot shows a user interface for managing translations. On the left, there's a vertical sidebar with various icons: a flag, a list, a speech bubble, a magnifying glass over a document, a question mark, a dropdown menu, and a checklist. The main area displays a list of keys:

Key *	Language	Message
AskBalancesAccountPrompt	default	For which account do you like to see the balance?
AskFromAccountType		
DisputeResponse		
AskPaymentAmount		
AskToAccount		
AskTxnsAccountType		
AskTxnsType		

At the bottom of the list, it says "Page 1 of 1" with navigation arrows. A green button labeled "+ Key" is visible. In the top right corner, there's a "View By" dropdown set to "Key" and a search bar labeled "Filter by Key or Text".

A modal window titled "Create Entry" is open in the center. It contains fields for "Key *" (set to "AskBalancesAccountPrompt"), "Language *" (set to "de" in a dropdown), and "Text *" (containing the German text "Für welches Konto möchten Sie den Kontostand wissen?"). A green "Create Entry" button is at the bottom right of the modal.

Resource strings can be **parameterized**
allowing bot designers to **insert values**
referenced from context variables at
runtime



Defining Variables in a Resource String

The screenshot shows a software application interface for managing resource strings. On the left, there is a sidebar with various icons. The main area displays a list of existing resource keys:

- AskBalancesAccountPrc
- AskFromAccountType
- AskPaymentAmount
- AskToAccount
- AskTxnsAccountType
- AskTxnsType

A modal window titled "Create Entry" is open in the center. It contains the following fields:

- Language ***: default
- Key ***: DisputeResponse
- Text ***: Successfully filed dispute, your reference number is {0} and reason is {1}

A large callout box highlights the placeholder text "is {0} and reason is {1}".

Requirement: Defining a Variable

variables:

...

rb: "resourcebundle"

Accessing a Resource Bundle String

Resource string with no parameters

`${rb('message_key')} or ${rb.message_key}`

Resource string with one parameter

`${rb('message_key','optional_parameter')}`

Resource string with many parameters

`${rb('message_key','optional_parameter','...','...')}`

Referencing Entities in a Resource Bundle call

The screenshot shows a user interface for managing resource entries. On the left, there is a list of entries with a header 'ToppingMessage'. Below the list, it says 'Page 1 of 1 (1 of 1 items)' with navigation arrows. On the right, a modal dialog titled 'Create Entry' is open. It contains fields for 'Language *' (set to 'default'), 'Key *' (set to 'ToppingMessage'), and 'Text *' (set to 'You selected {0} to go on top of your Pizza'). A green 'Create Entry' button is at the bottom right of the dialog.

+ Key

ToppingMessage

Page 1 of 1 (1 of 1 items) | K < >

Create Entry

Language *

default

Key *

ToppingMessage

Text *

You selected {0} to go on top of your Pizza

Create Entry

Referencing Entities in a Resource Bundle call

```
startOrder:  
  component: "System.Output"  
  properties:  
    text: "${rb('ToppingMessage', ${iResult.value.entityMatches['Toppings'][0]})}"  
transitions:  
  return: "done"
```



Bot

Intent

Q&A

I like to order a pizza with salami

Oops I'm encountering a spot of trouble.
Please try again later...

Referencing Entities in a Resource Bundle call

```
startOrder:  
  component: "System.Output"  
  properties:  
    text: "${rb('ToppingMessage', '${iResult.value.entityMatches.Toppings[0]}')}"  
transitions:  
  return: "done"
```

Bot

Intent

Q&A



I like to order a pizza with salami

You selected salami to go on top of your
Pizza

Discussion

What other solution would have worked?



Multi Language Support

Translation Service & Resource Bundle Summary

Translation Service and Resource Bundle Summary

Component / Feature	Description	Reads language settings from	Requires translation service
System.DetectLanguage	Detects language from user input. Sets profile.languageTag	NA	Yes
System.TranslateInput	Translates user messages to English	NA	Yes
System.TranslateOutput	Translates output messages to user language	profile.languageTag	Yes
Resource Bundle	Displays pre-defined language strings	profile.languageTag profile.locale (second)	No
Component "translate" property	Overrides global translation settings for a component	profile.languageTag profile.locale (second)	Yes

Multi Language Support

Custom Components

**Custom components don't share
the translation service and resource
bundles configured for a bot**



Options to Return a Response from Custom Component

- **Save data in a context variable**
 - Reference variable in an output component or from a label or prompt
- **Send responses directly to the user**
 - Does not require any help from system components

Example: Translating Data Saved in a Context Variable

Custom Component Code

```
...
let product = {product: "an apple", type: "fruit", origin: "Spain"} ;
conversation.variable('data_variable', product );
conversation.transition();
done();
```

BotML

```
printProduct:
  component: "System.Output"
  properties:
    text: "The product in your cart is a ${data_variable.value.type}. It is
          ${data_variable.value.product} from ${data_variable.value.origin}"
  translate: true
```

Translating Custom Component Direct Messages Responses

- Messages a custom component returns using the SDK `conversation.reply()` function are directly sent to a user
 - Bot stays out of the loop and thus cannot help with translation
- Messages need to be translated by the custom component
- Two Options
 - Reference a translation service before sending the message
 - Create a custom resource bundle implementation and define translations as part of the custom component

Resource Bundle Sample on Oracle TechExchange Blog

TECHEXCHANGE, THE ORACLE MOBILE PLATFORM | Thursday, March 15, 2018

TechExchange: A Simple Guide and Solution to Using Resource Bundles in Custom Components

By: [Frank Nimphius](#) | Senior Principal Product Manager

Sample by Frank Nimphius, March 2018

A common requirement for bots is to support multiple languages. To address this requirement, Oracle Intelligent Bots provides the ability to configure translation services from Google and Microsoft to auto-translate user input messages and bot responses. If you don't want bot responses to be auto-translated then a second option is to use Resource Bundles instead.

All the before mentioned options work great for building multi lingual bots, but require messages to be defined in the dialog flow, or saved in context variables. This excludes custom components that directly write user responses to the message channel using the bot SDK `conversation.reply(...)` function.

- JS files contain message keys and translation strings
 - One file per language
 - Messages can be parameterized
- Custom component calls resource bundle with message key and language code
 - Language code passed as input parameter from bot

Multi Language Support

Strategies & Practices

Use Resource Bundles for Prompts and Responses

- Ensures the correct business wording and tone
- Doesn't require a translation service
- Allows add content that should not be translated
 - Parameter values are not translated
 - Summer as a time of season can be translated, Summer as a female name in the US certainly not
- Set component "translate" property to false if auto translation is enabled for a bot (opt-out)

Ensure Good Entity Recognition

- back-and-forth test the translation service
 - Translate an English string into a foreign language and the translated string back into English
 - Create synonyms for entity values where the translation service deviates from the original
- Consider "blind testing" testing
 - Bot developers know about the utterances
 - Good testing aims for bots to fail, not to succeed
- Avoid use of abbreviations or slang even if understood in a region
 - E.g. use "checking account" instead of "checking"
- Guide users
 - Use value lists whenever possible

Consider Limitations of Language Detection

- System.DetectLanguage uses the translation service to detect the user language from a sample sentence
- Be aware of closely related languages.

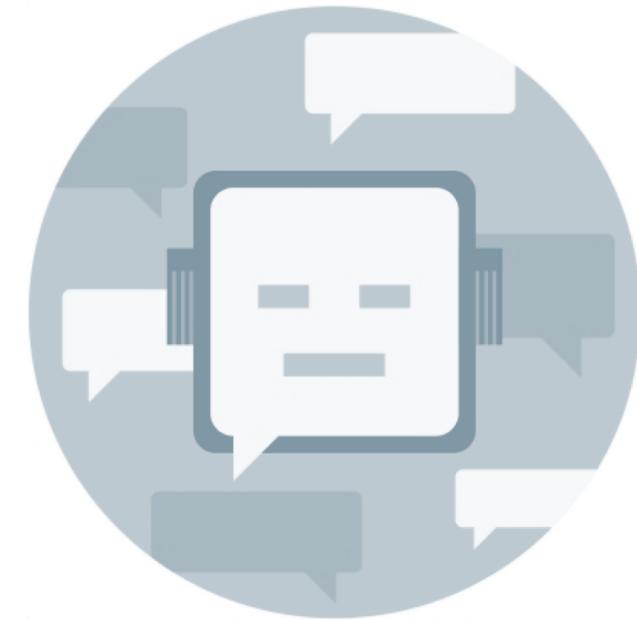
"Good morning my friend"

- **Swedish:** "God morgen min vän!"
- **Danish:** "God morgen min ven!"
- **Norwegian:** "God morgen min venn!"

Control the Languages to Support by the Bot

- Using a translation service your bot probably understands more languages than you need
- Limit the languages to support to those you regularly test and that you have resource bundles for
- To limit the set of languages
 - Detect a user language and compare it to a list of supported languages
 - Don't detect the user language at all but have the user selecting a preferred language

Because bots can detect the user language doesn't mean they have to.





Advanced Bot Training Hands-On

Lab 6: Implementing Multi Language Support

Integrated Cloud Applications & Platform Services

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