

# AMELIA VE

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Day One



Presented by  
IPsoft Global Training and Development



# Introductions

- Brian Kuchta, Amelia Trainer
- Participants



# Housekeeping

- Please put cell phones on silent
- Please resist checking email
- Refreshments and restrooms
- Breaks and Lunch
- Office manager
- Download class files and PDF from the calendar invite
- Log into WebEx (for demo or questions)
- Chrome browser preferred for Admin work in Amelia V3



# Agenda – Day One

- Learning Objectives
- Who is Amelia V3?
- Amelia Role and Skill Selection
- Logging into Amelia V3
- Amelia Trainer: Intents
- Intents: Modeling Process, Algorithms, Statistics
- Process Memory: Business Process Networks (BPNs)
- Say and Ask Tasks
- Service Prefix - response:
- Putting It Together: Connecting Intents and BPNs
- Additional BPN Functionality and Task Types
- Q&A



# Learning Objectives

By the end of this course, you will be able to:

Train Amelia to conduct a business process and answer organization-specific questions using:

- End user intent recognition (intents)
- Customer answer capture (entities)
- Process design (BPNs)
- Frequently Asked Questions (intent FAQs)
- Workflow decision-making based on end user responses (prefixes)
- Integration with API (integration framework)
- Custom UI elements such as widgets and chat notes (custom UI/script tasks)

# Who is Amelia V3?

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# Amelia V3, the Most Human AI

## Cognitive Platform

- Amelia can do many of the tasks that a live agent can
- Amelia can learn using the same information used to train a live agent
- Amelia can access the same systems/databases that a live agent can... directly



# Demo

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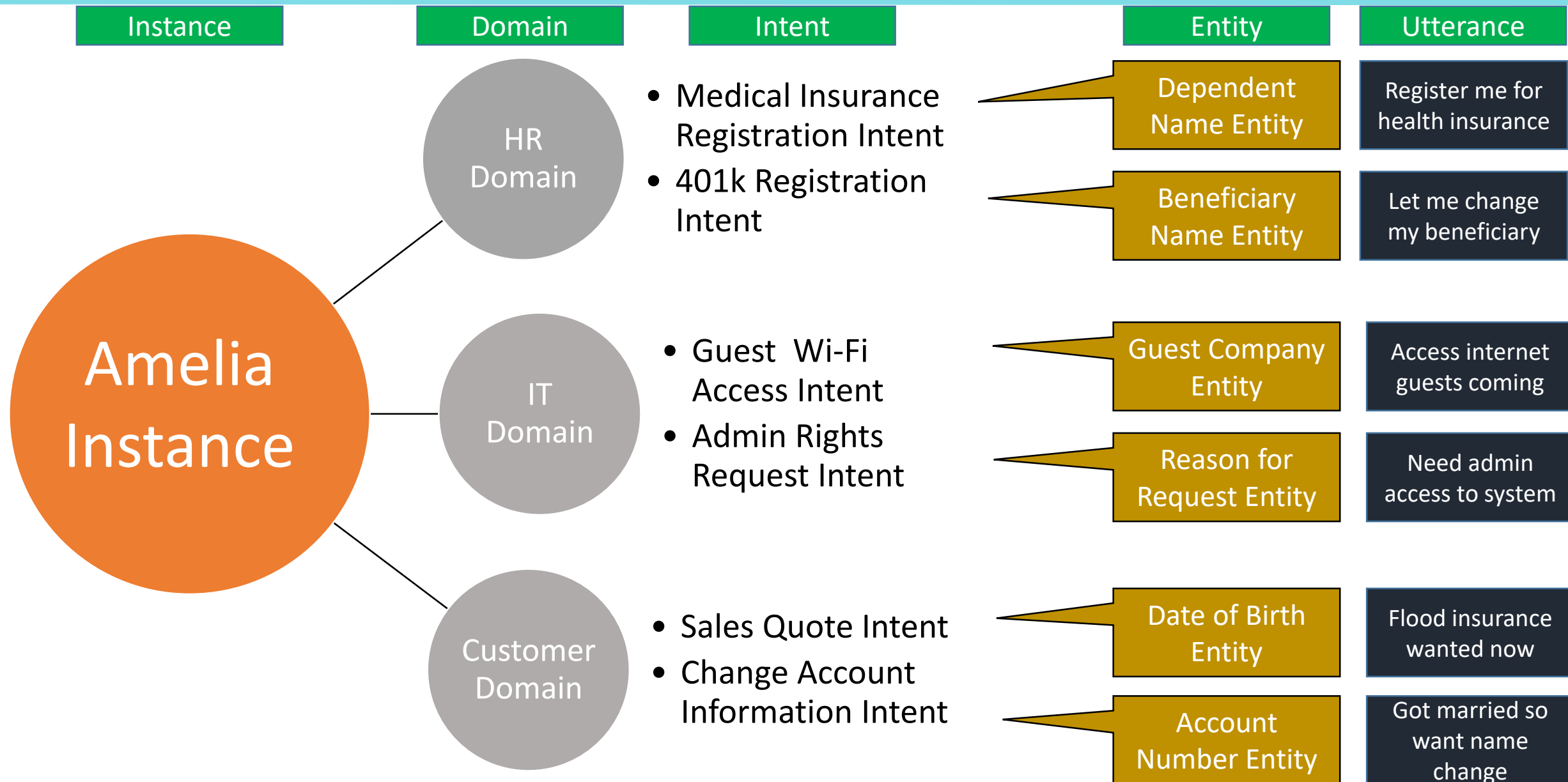


# Amelia Role and Skill Selection

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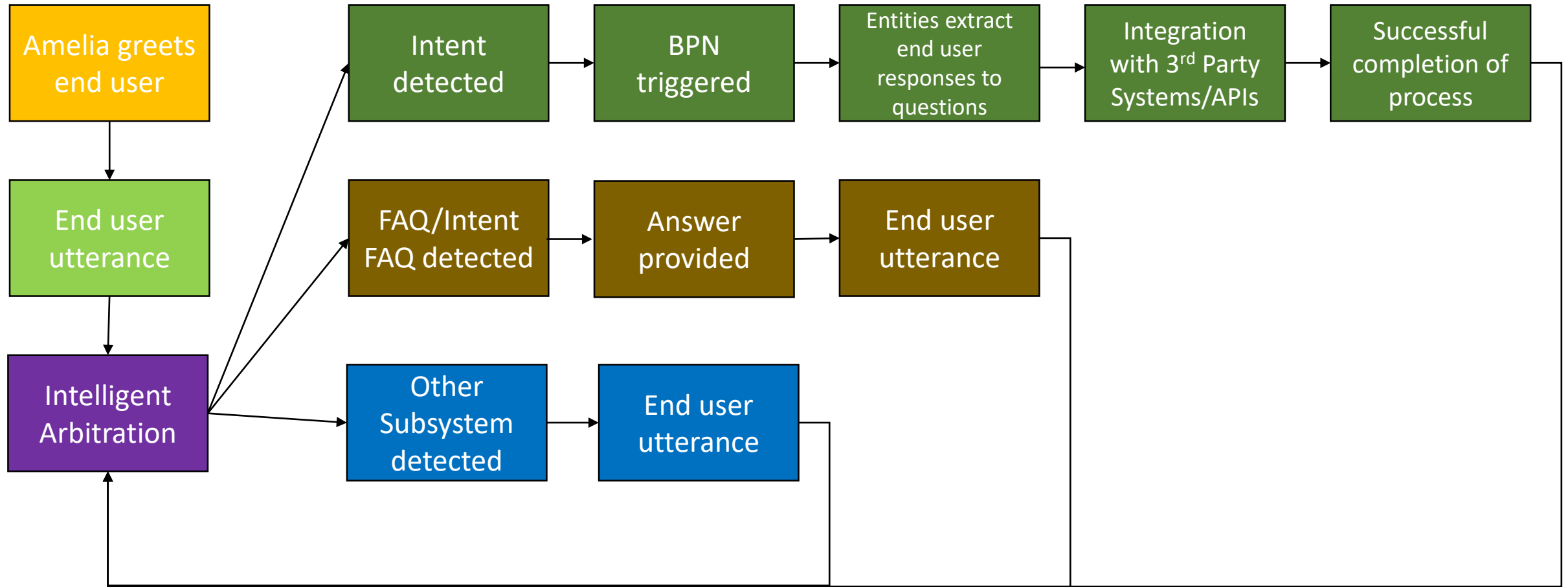


# Terminology: Instance, Domain, Intent, Entity, Utterances





# General Amelia Conversation Flow





# Amelia Role/Skill Selection

Within your domain, each participant will select a different role and skill from one of the business sectors below and train Amelia on to do that skill.

## IT Service Desk Agent

- Admin Access
- Software Installation

## Retail Banker/Loan Officer

- Lost Credit Card
- Obtain Mortgage

## Travel/Customer Service Agent

- Lost Luggage
- Book Travel Tickets

## Insurance Sales/Claims Agent

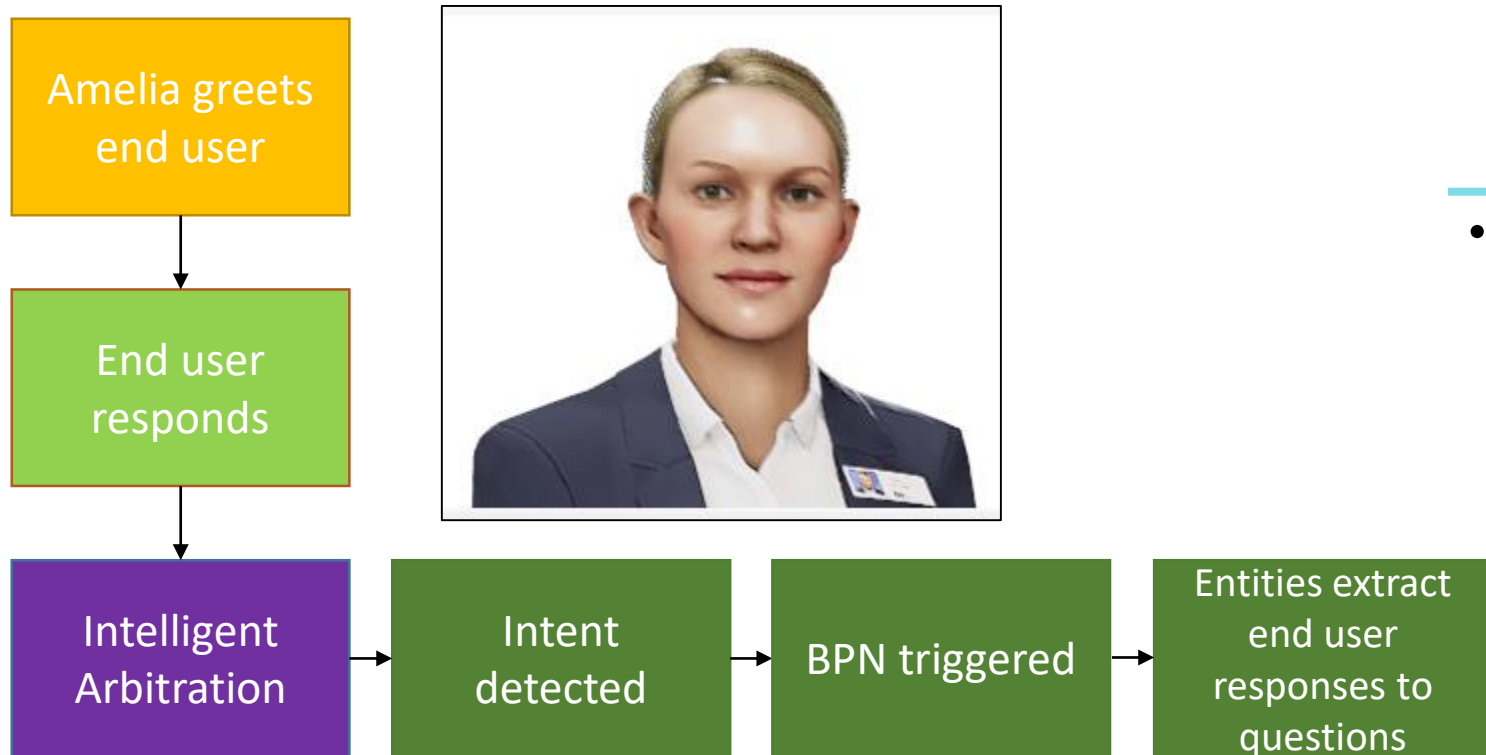
- Auto Insurance Quote
- Property Insurance Claim

## HR Generalist

- Request PTO
- Change Coverage



# Activity



Timing: 15 minutes

Validation: Verbal review in class



## Skill Development

- Based on your selected role for Amelia, decide on a skill => an actionable process Amelia can complete in lieu of a live agent
  - Process must have an action – it's more than question/answer

### Answer the following:

1. What is the name of the intent that will trigger this process into action?
2. What are some example sentences an end user might say to trigger this intent?
3. What are at least two questions Amelia will need to ask in order to complete this process?
  - These should NOT be yes/no questions, which are typically directional and not stored as entities/variables.

# Logging Into Amelia V3

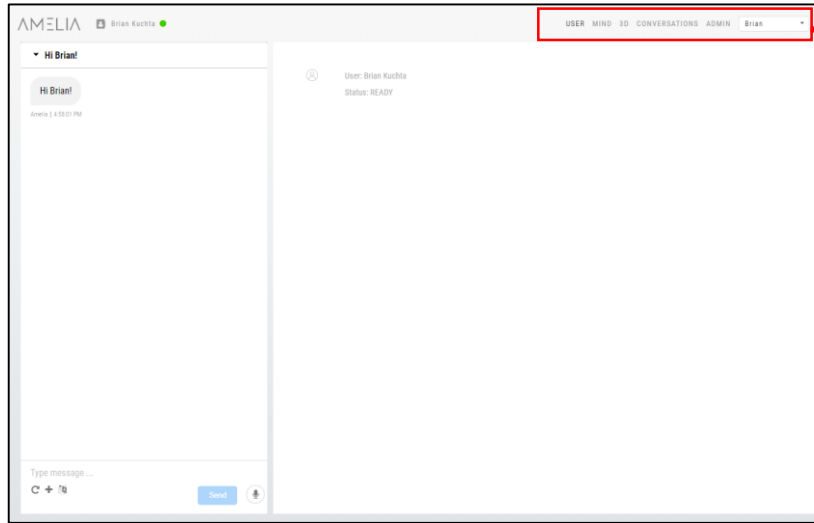
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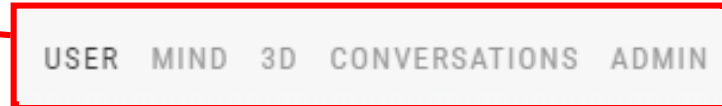
# Logging Into Amelia Step-by-Step



1. Using Chrome, log into the training instance.



2. You will land in User view.



3a. In the upper right-hand corner, right click on Conversations and open in a new tab.

3b. Right click on Admin and open in a new tab.

3c. In User view, click on Mind.

You should now have the following views open in three separate tabs:

- Active Conversations
- Admin view
- Mind view



# Active Conversations – Auto-Refresh

Active Conversations: Used by agents to pick up escalated chats

- Includes auto-refresh so you won't get logged out

AMELIA

Brian Kuchta

⚡

☰

Active Conversations

Domains ▾

Queues ▾

Agents ▾

Auto-Refresh ▾

☐ My Queues

↺

▸ Queues Summary

▾ Conversations Summary

ID	Domain	User	Agent	Status	Queue	Reason	P-SLA	Created	Queued	Answer Speed	Handle Time	Actions
0 Conversations, Page 1 of 0												





# Admin View – Build Amelia

AMELIA

Welcome to Amelia Administration

Process Memory

- Process Knowledge
- Script Library

Analytic Memory

- Import Files
- View/Delete Data
- Create Model

Affective Memory

Semantic Memory

- Semnet Documents

v3.5.0

AMELIA

v3.5.0

Welcome to Amelia Administration

Process Memory

- Process Knowledge
- Script Library

Analytic Memory

- Import Files
- View/Delete Data
- Create Model

Amelia Trainer

- Intents
- Entities
- Annotate
- Predict
- Dashboard
- AIML Documents

Integrations

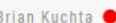
System Settings


Settings

- Domains
- Groups



# Mind View – Test Amelia Build with and without Avatar

AMELIA  Brian Kuchta



Amelia | 12:38:57 PM

I want to reserve a room

Brian Kuchta | 12:50:37 PM

I'm happy to help you make a reservation.

Amelia | 12:49:05 PM

What's your name?

Amelia | 12:49:05 PM

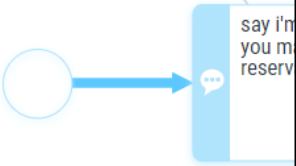
Type message ...


Send

Process Memory

Process: reserveARoomComplete  
Version: 10.0

{ BPN triggers based on an utterance  
intent model



AMELIA  Brian Kuchta

USER MIND 3D CONVERSATIONS ADMIN Brian

What's your name?

Amelia | 12:38:57 PM

Hello Brian.

Amelia | 12:49:04 PM

I want to reserve a room

Brian Kuchta | 12:49:04 PM

Amelia | 12:49:05 PM

I'm happy to help you make a reservation.

Amelia | 12:49:05 PM

What's your name?

Amelia | 12:49:05 PM

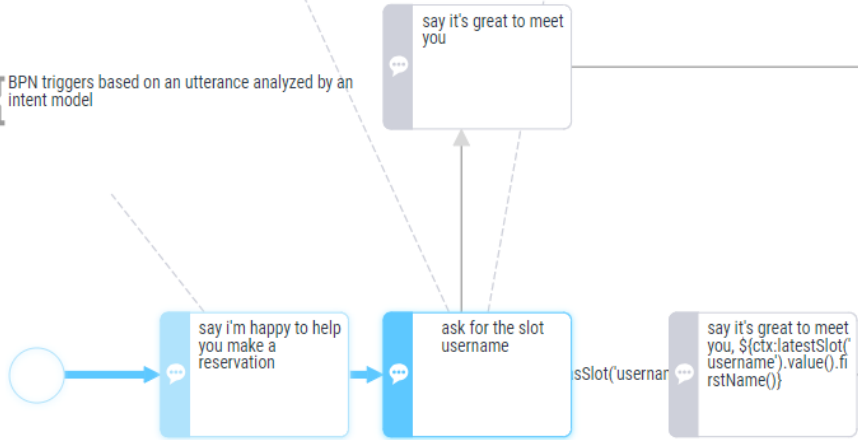
Type message ...


Send


Process Memory


Process: reserveARoomComplete  
Version: 10.0


{ BPN triggers based on an utterance analyzed by an  
intent model

















Debug

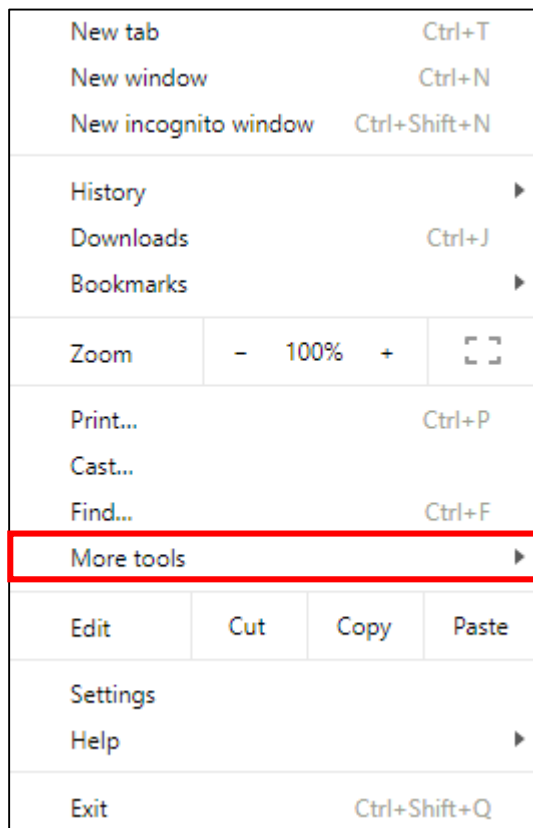


# How to Disable Amelia V3 Avatar in Mind View

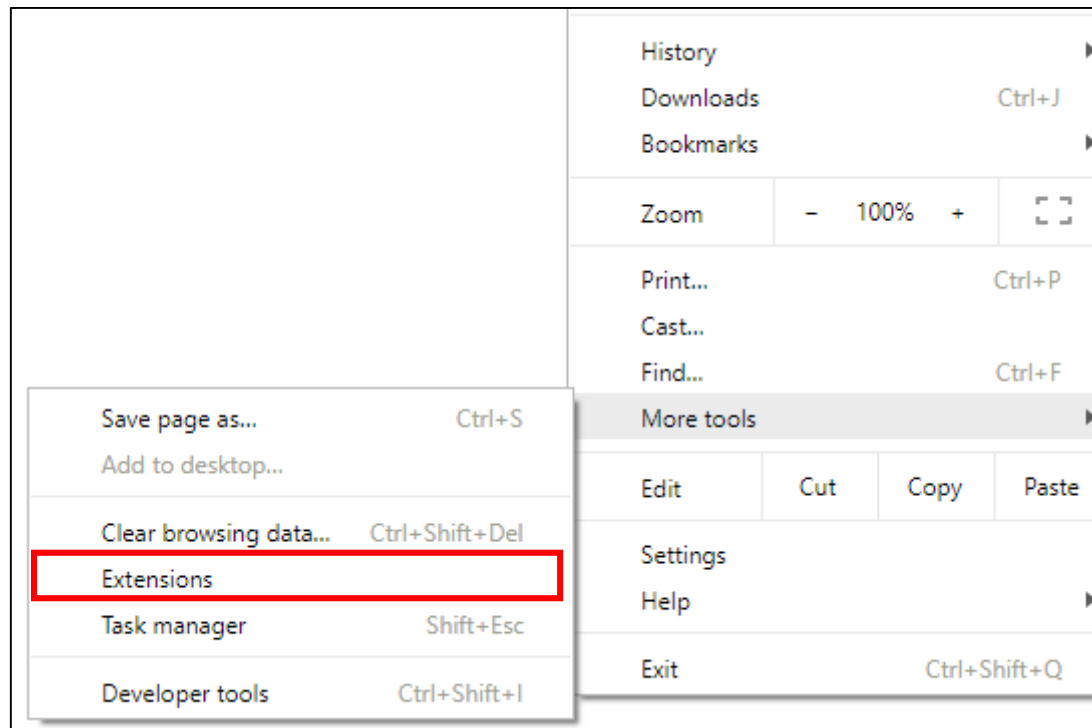


1. Chrome three dot button

2. More tools



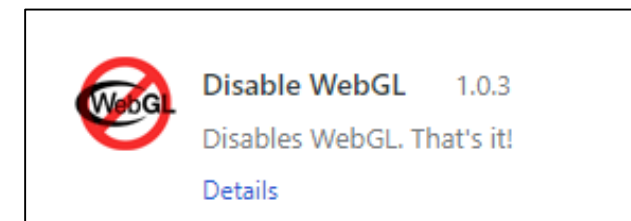
3. Extensions



4. Get more extensions



5. Search for and install Disable WebGL



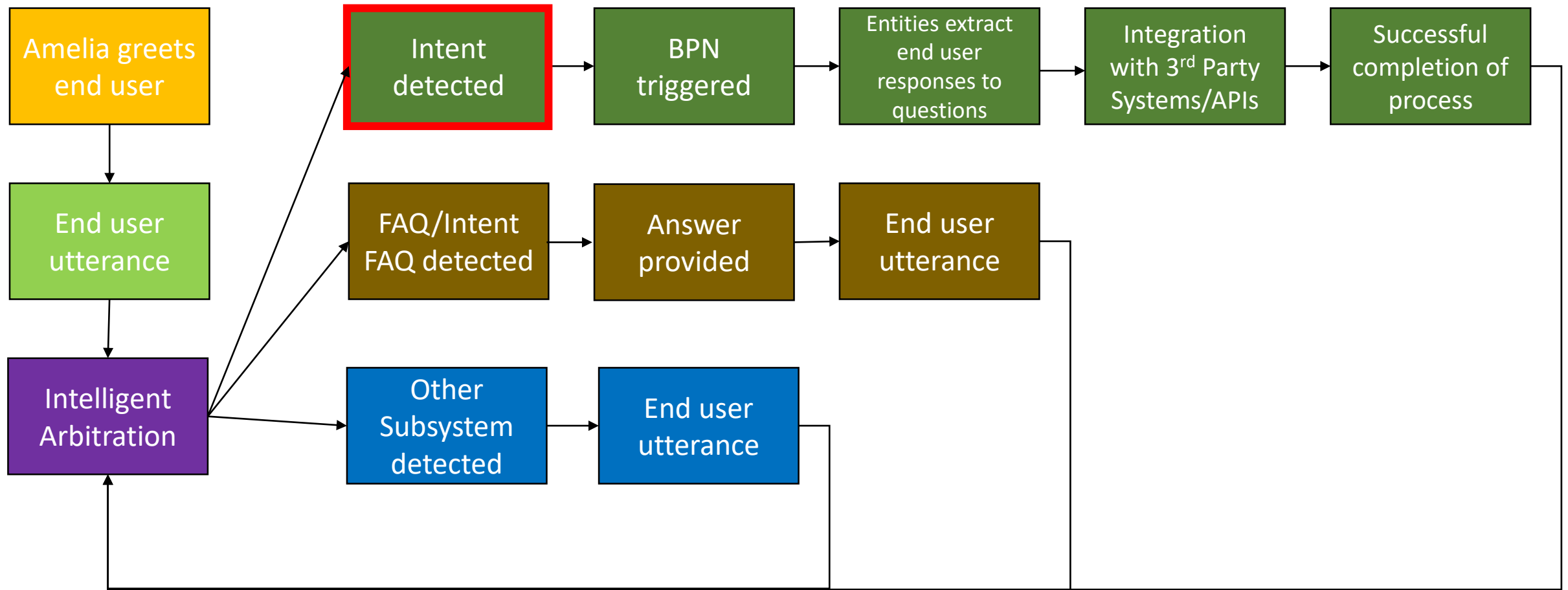
NOTE: Avatar can also be turned off for the entire domain in System Settings (requires admin permissions.)

# Amelia Trainer: Intents

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# General Amelia Conversation Flow





# Intents

- Used to create model to trigger specific BPN/intent FAQ based on end user utterance
- Domain specific
- Can import/export into other domains/instances
- Formerly known as goals (V2)

Intent Name	Description	Actions
autoinsurance	Auto insurance quote for essentials training	<input type="checkbox"/>
billDiscrepancy	Based on grammar	<input type="checkbox"/>
bookLocalAttractions	Provides information and helps with booking of local attractions	<input type="checkbox"/>
cancelModifyReservation	Allows end user to cancel/modify reservation - launches as stochastic BPN	<input type="checkbox"/>
check_in_timeBPN	BPN that responds as an FAQ	<input type="checkbox"/>
check_in_timeBPNHTML	BPN that triggers FAQ with HTML answer	<input type="checkbox"/>
checkInTimeIntentFAQ	Intent FAQ	<input type="checkbox"/>
checkInTimeIntentFAQHTML	Intent FAQ with HTML	<input type="checkbox"/>
contextServiceIntentScripts	Test intent for Context Service Intent Scripting Services	<input type="checkbox"/>
epm localAttractionInfo	Intent for epMem Model	<input type="checkbox"/>

Page 1 of 4 -- 31 total intents

Bulk Actions ☐ Select All

- Must train Amelia on example utterances that should trigger a specific intent
  - Requires variety in sentence structure and word choice

## Examples for Reserve a Hotel Room:

- Do you have room for the coming weeks at your hotel?
- Everything is set for my trip and I just need a place to stay
- For me and my wife, I need room reserved in your establishment
- Frequent traveler who needs lodging while visiting
- get a bed for several nights while staying in your city



# Group Activity: Intent using annotation framework and prediction testing

1. Admin view: click on Amelia Trainer->Intents then click Add Intents tab.
2. Add “yourInitialsGuestWifi” as Intent Name, add a description, and click Add Intent button.
3. Click on your intent in intent list and add “When resuming the process, Amelia asks...” (confirm continue question). Save changes.
4. Click on Amelia Trainer->Annotate and select TSV under Load New File.
5. In V3DayOneExerciseFiles folder->Intents subfolder, rename “guestWifiAnnotated” to “yourInitialsGuestWifiAnnotated” and load into annotation framework.
6. Save file as “yourInitialsGuestWifi”.
7. In V3DayOneExerciseFiles->Intents, rename “negativeGuestWifi” as “yourInitialsNegativeGuestWifi” and load into annotation framework. Do NOT annotate, but do save file as “yourInitialsNegativeGuestWifi”.
8. Right-hand side: click Train tab and choose Intent Classifier.
9. Name the new model “yourInitialsGuestWifi”. Turn off Include all intents and turn off Add fallback examples. Include data sets you imported into annotation framework as the training data sets. Leave Evaluation with defaults. In Algorithm, select Meta Classifier Model Type.
10. Click on Amelia Trainer->Dashboard to view the model training outcome.
11. Click on Amelia Trainer->Intents->Predict. Select your model, enter a test utterance, and click Predict.





# Amelia Trainer – New Intent

1. Amelia Trainer-> Intents
2. Click Add Intent and enter a name (case sensitive)
3. Add a description
4. Can upload an annotated data set into the intent itself (TSV format)
  - Add
  - Merge (no duplicates)
  - Overwrite

1

Amelia Trainer

Intents

Entities

Annotate

Predict

Grammars

Dashboard

AIML Documents

Intents

Q

Name, BPN, or FAQ

Intent Name	Description
<a href="#">autoInsurance</a>	Auto insurance quote for essentials training
<a href="#">billDiscrepancy</a>	Based on grammar
<a href="#">bkGuestWifi</a>	Get guest wifi
<a href="#">bookLocalAttractions</a>	Provides information and helps with booking of local attractions
<a href="#">cancelModifyReservation</a>	Allows end user to cancel/modify reservation - launches as stochastic BPN
<a href="#">check_in_timeBPN</a>	BPN that responds as an FAQ
<a href="#">check_in_timeBPNHTML</a>	BPN that triggers FAQ with HTML answer
<a href="#">checkInIntentFAQQuestionMark</a>	
<a href="#">checkInTimeIntentFAQ</a>	Intent FAQ

2

Add Intents

3

Add Intents

Enter an intent name

+

Add a description

Add Intent

Upload Intents

Merge

Format: TSV. Max Size: 2Mb

4

Drag and Drop your file in this area or [Browse](#) your computer

reserveARoom

book a bed in your establishment for my business trip please

reserveARoom

book a hotel suite

reserveARoom

booking a reservation at your hotel chain next week

reserveARoom

Booking a room for me for tonight

reserveARoom

business travel - room needed

reserveARoom

can i book a suite in the hotel tonight

reserveARoom

Can you help me with a new reservation?

reserveARoom

checking in to see if i can book a room

reserveARoom

coming there for a convention and need to make a reservation at your lodging

reserveARoom

Definitely want a reservation at your hotel for upcoming vacation





# Working with a New Intent

5. Click the intent name or pencil
6. Add a description
7. Chose action intent should launch
  - Execute BPN
    - Select available BPN from list
  - Answer FAQ
    - Opens field for FAQ answer
8. Add question to “When resuming the process, Amelia asks...”
  - If another process has been triggered, this question will be asked to determine if end user wants to return to where they left off in this process
9. Add example utterance(s) manually in the “The user wants to” field and/or in User Says (optional)
10. Used for CQA – covered on Day3

Intent Name ▾	Description	Actions
petPolicyIntentFAQHTML	Intent FAQ HTML test - HTML not working as of 3.4.6	<input type="checkbox"/>
productIntentFAQ	Intent FAQ for essentials training	<input type="checkbox"/>
<b>reserveARoom</b>	This allows you to reserve a room	<input type="checkbox"/>

**reservearoom** Save changes Revert changes Disable intent Delete

This allows you to reserve a room

When intent is identified... Execute Process ▼ Execute the process... reserveARoomComplete ▼

When resuming the process, Amelia asks... Would you like to continue with your room reservation?

The user wants to... e.g. "reset a password"

Intent keywords and phrases... the weekend x staying x to sleep x beautiful x trip x ▼

**USER SAYS**

Add an example utterance for this intent...

Use intent grammar... Select an intent grammar ▼



# Amelia Trainer – Annotate

11. Can also import annotated/unannotated utterance examples into annotation framework

- Include all training data for intent model here
- Include new training data to upgrade existing model
- Include unannotated data as NEGATIVE data for intent model

**NOTE: This is another, separate option to importing/adding example utterances to the intent itself**

- Import data set of example utterances
  - Annotated
  - Unannotated

- **Plain Text: any plain text file without annotation**
- User-Agent Dialog: Amelia/User annotated conversation for use with Episodic Memory (TBD)
- Annotation Document: JSON previously downloaded through annotation framework
- **TSV: annotated data set**



# Option 1: Annotated Utterances into Annotation Framework

reserveARoom book a bed in your establishment for my business trip please  
reserveARoom book a hotel suite  
reserveARoom booking a reservation at your hotel chain next week  
reserveARoom Booking a room for me for tonight  
reserveARoom business travel - room needed  
reserveARoom can i book a suite in the hotel tonight  
reserveARoom Can you help me with a new reservation?  
reserveARoom checking in to see if i can book a room  
reserveARoom coming there for a convention and need to make a reservation at your lodging  
reserveARoom Definitely want a reservation at your hotel for upcoming vacation

☐ Plain Text

☐ User-Agent Dialog

☐ Annotated Document

☒ TSV

Drag and Drop your file in this area  
or [Browse](#) your computer

Annotation Framework

Intents Entities Predict Annotate Dashboard

1. Load / Learn

2. Annotate

3. Train

4. Export

121 total utterances

Auto Annotate

Train

reserveARoomAnnotated

Save As

Intents

Entities

A room reservation is needed at the resort

reserveARoom

About to take a trip and need a place to stay with you while visiting your city

reserveARoom

accommodations needed at your beautiful resort

reserveARoom

All i need is room or suite in your hotel for the week

reserveARoom

any chance you have a room available next week for two nights?

reserveARoom

Are there any vacancies at your hotel next month?

reserveARoom

As it gets closer to my vacation, I need a hotel room.

reserveARoom



# Option 2: Unannotated Utterances into Annotation Framework

12. Annotate utterances with the specific intent it belongs to
  - Can be mixed data set of utterances for various intents
13. Save annotated data set as a memorable file name
  - Recommend inclusion of the date/version for the data set
  - Cannot use the same name twice

book a bed in your establishment for my business trip please  
book a hotel suite  
booking a reservation at your hotel chain next week  
Booking a room for me for tonight  
business travel - room needed  
can i book a suite in the hotel tonight  
Can you help me with a new reservation?  
checking in to see if i can book a room  
coming there for a convention and need to make a reservation at your lodging  
Definitely want a reservation at your hotel for upcoming vacation

Annotation Framework

121 total utterances

Auto Annotate Train

1. Load 2. Annotate 3. Train 4. Export

Intents Entities Predict Annotate Dashboard

reserveARoomV2bk Save As

Select an intent

- petIntentFAQQuestionMark
- petPolicyIntentFAQ
- petPolicyIntentFAQHTML
- productIntentFAQ
- reserveARoom**
- reserveARoomForAgentSupervisor
- resetPassword



# Annotation Framework – Negative Data Set

## 14. Mandatory Negative data set

- Imported and NOT annotated
- Should include utterances that should NOT launch any of the intents
- Include in-domain utterances
  - e.g., “I want to reserve a car for the weekend.”
- Include out-of-domain utterances
  - e.g., “I like pizza with mushrooms.”
- Save negative data set as a memorable file name
  - Recommend inclusion of the date/version for the data set
  - Cannot use the same name twice

The screenshot shows the 'Annotation Framework' interface. At the top, there's a progress bar with four steps: 1. Load / Learn, 2. Annotate (active), 3. Train, and 4. Export. Below the progress bar, it says '103 total utterances' and has buttons for 'Auto Annotate' and 'Train'. On the right, there's a dropdown menu showing 'negativeReserveARoom2' and a 'Save As' button. The main area is divided into two tabs: 'Intents' and 'Entities'. A search bar is at the top left of the main area. A list of utterances is displayed, with the first one, 'A blind date is a date with someone you don't know', circled and labeled with the number '14'. Other utterances include 'Always remember that the night drop is here, and we really appreciate you returning your books for all to use', 'any way to check the rate on a suite', 'Are you going to vote in the mayor's race', 'are you on an exercise program now', and 'Be careful about the time limits on the streets'. On the far right, there's a vertical sidebar with buttons for 'Load', 'Annotate', 'Train', 'Queue', 'Export', and 'Chart'.



# Annotation Framework – Train Intent Model

15. Select Train -> Intent Classifier

16. Create new model -> name model

17. Designate model settings

## Datasets:

- Include utterances for all/specific intents
  - Example utterances imported into intent
- Select Training Corpus
  - Utterances annotated in Annotation Framework including Negative class
- Add fallback examples
  - Optional, built-in negative class
  - 3X intent utterances - Cannot see/modify

## Evaluation:

- Include validation data set and cross-validation
- Guideline: validation data set typically around 20% of total data set

## Algorithm:

- Select Algorithm
  - PA (default)
  - Linear SVM
  - Logistic Regression

Train Models

Select Type

Intent Classifier

Select from existing

Select an existing model

Create new model

+ Or enter a new model name

Train Models

reserveARoom

Intent Classifier

New

Save Train

Datasets

Include all intents

Training datasets

Add training data


Add fallback examples

Evaluation

Algorithm



# Amelia Trainer – Dashboard

18. Model sent to queue
19. Go to Amelia Trainer->Dashboard
20. Check stats for model training to determine potential confusion
21. When ready, deploy model 

Train Models

reserveARoomPABase

Intent Classifier

Revision 3.0  Queued

Save

Train

Datasets

Evaluation

Algorithm

Dashboard

Intents






Entities

Predict

Annotate

Dashboard

Model Name

Model Name	Revision	Created By	Utterances	Algorithm	Actions	Logs	Stats	Status
reserveARoomLSVM	v.1.0	Brian Kuchta	224	Linear SVM				 ready
reserveARoomPA	v.1.0	Brian Kuchta	224	PAC				 ready
reserveARoomValidationLR	v.1.0	Brian Kuchta	224	Logistic Regression	  			 ready
reserveARoomValidationLSVM	v.1.0	Brian Kuchta	224	Linear SVM	  			 deployed
reserveARoomValidationPA	v.1.0	Brian Kuchta	224	PAC	  			 ready
roomReservationForSpanlessPA	v.1.0	Brian Kuchta	224	PAC	  			 ready

If status shows failure, check logs


21

20



# Predicting Intents


Note: Model to be tested must be deployed

 Amelia Trainer

- Intents
- Entities
- Annotate
- Predict**
- Grammars
- Dashboard
- AIML Documents

## Predict Intents and Entities

IntentsEntities**Predict**AnnotateDashboard

 I want to reserve a room

Predict

Advanced options

IntentsEntitiesCQASystem NLP

**reserveARoom**  
Used to book a hotel room

Execute Process reserveARoomComplete

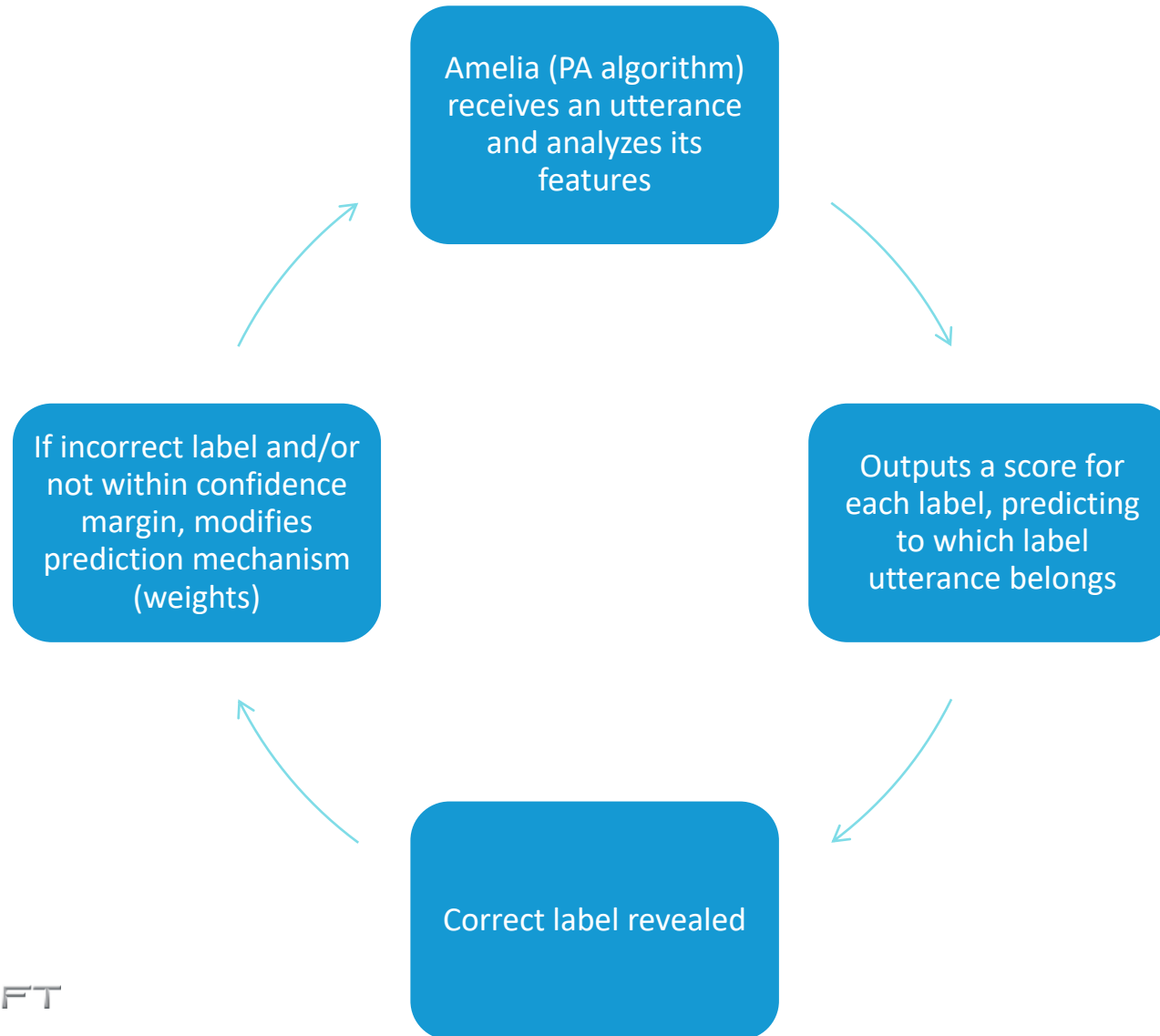


# Intents: Modeling Process, Algorithms, and Statistics

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# Multiclass Classification and the PA Algorithm



**Correct prediction:** margin = positive

- Must also have **high-confidence prediction**

Example: Algorithm confidence goal = margin > 1

- Margin > 1, loss = 0
- Margin < 1, instantaneous loss = difference between 1 and margin value

When loss = 0, algorithm **passive**

When loss is positive, algorithm **aggressive**

- Forces weight vector for next round to satisfy constraint



# Dashboard Stats – Correct, Gold, System

Dashboard

Intents Entities Predict Annotate **Dashboard**

Model Name

Model Name Revision Created By Utterances Algorithm Actions Logs Stats Status

> reserveARoomPA v.2.0 Brian Kuchta 224 PAC ready

reserveARoomPA: Model Evaluations

Evaluation Name	Evaluation Date	Statistics
reserveARoomPA_validation	7/30/2018, 4:38:33 PM	
reserveARoomPA_5-fold_cv	7/30/2018, 4:38:33 PM	
reserveARoomPA_5-fold_cv_4	7/30/2018, 4:38:33 PM	
reserveARoomPA_5-fold_cv_3	7/30/2018, 4:38:33 PM	
reserveARoomPA_5-fold_cv_2	7/30/2018, 4:38:33 PM	
reserveARoomPA_5-fold_cv_1	7/30/2018, 4:38:33 PM	
reserveARoomPA_5-fold_cv_0	7/30/2018, 4:38:33 PM	

reserveARoomPA: Model Evaluations

reserveARoomPA\_5-fold\_cv: Statistics

	Correct	Gold	System	Precision	Recall	F1
None	97	103	99	97.98	94.17	96.04
reserveARoom	119	121	125	95.20	98.35	96.75
Overall	216	224	224	96.43	96.43	96.43

reserveARoomPA\_5-fold\_cv\_1 7/30/2018, 4:38:33 PM

reserveARoomPA\_5-fold\_cv\_0 7/30/2018, 4:38:33 PM



# Dashboard Stats – Precision, Recall, F-measure

- Precision, Recall, and F-measure can be used as a high-level gauge only
  - Will not likely help in improving a model
  - Not specifically a determiner of model success

## reserveARoomPA: Model Evaluations

### reserveARoomPA\_5-fold\_cv: Statistics

	Correct	Gold	System	Precision	Recall	F1
None	97	103	99	97.98	94.17	96.04
reserveARoom	119	121	125	95.20	98.35	96.75
Overall	216	224	224	96.43	96.43	96.43

reserveARoomPA\_5-fold\_cv\_1

7/30/2018, 4:38:33 PM



reserveARoomPA\_5-fold\_cv\_0

7/30/2018, 4:38:33 PM



## Precision =

$$\frac{\text{Correct: number of correct predictions for the class}}{\text{System: total number of predictions for the class}}$$

## Recall =







$$\frac{\text{Correct: number of correct predictions for the class}}{\text{Gold: total number of actual instances with class label}}$$

## F-Measure =

$$2 * \frac{\text{Precision} * \text{Recall}}{\text{Precision} + \text{Recall}}$$



# Dashboard Stats – Confusion Matrix and Misclassifications

reserveARoomPA: Model Evaluations		
Evaluation Name	Evaluation Date	Statistics
<b>reserveARoomPA_5-fold_cv: Confusion Matrix</b>		
	None	reserveARoom
None	97	6
reserveARoom	2	119
reserveARoomPA_5-fold_cv_1	7/30/2018, 4:38:33 PM	  
reserveARoomPA_5-fold_cv_0	7/30/2018, 4:38:33 PM	  

reserveARoomPA_5-fold_cv: Misclassifications			
Actual	Prediction	Span	Context
None	reserveARoom		ever been to the hotel California ?
reserveARoom	None		you got any rooms available for me to book for a few nights
None	reserveARoom		need to get a car with room for five
None	reserveARoom		got any tables available for reservation
reserveARoom	None		Can you help me with a new reservation ?
None	reserveARoom		get an automobile for this afternoon
None	reserveARoom		no need to book a restaurant reservation
None	reserveARoom		wan na book a table in your establishment



# Intent Best Practices

1. One intent model per domain
  - No intent models in Global domain
2. Data collection – start small and iterate
  - Train, evaluate, revise, retrain
3. Heuristic: 50–100 examples per intent
  - More than 100 rarely needed unless high variation of expression in intent
4. Combine ambiguous intents
5. Without thoughtful negatives, everything will potentially be seen as an intent
  - Be sure to include in-domain negatives
6. Use descriptive names
  - Be consistent in usage of camelCase or snake\_case
7. Test your intent model with a test dataset that is as close to expected data as possible
  - Live chat examples best
8. If overmatching, add negative examples that look similar but should not match



# Intent Algorithms

- Passive Aggressive Classifier (default)
- Linear SVM – Similar to Passive Aggressive, maximizes distances between classes
  - May be overly sensitive to changes in datasets
- Logistic Regression – Produces scores interpretable as probabilities -> used to create thresholds to control classifier precision
  - May eventually be used with intent threshold configuration (TBD)
- DNN Classifier (Beta)
  - Bidirectional LSTM
  - Works better with more data



# Activity

## Intent Workflow:

1. Determine intent that should launch specific process (Skill)
2. Create the intent (Intents):
  - Description
  - Confirm Continue Question
  - Utterances to Launch Intent (Manually Added or Imported)
  - Execute BPN (BPN) or Answer FAQ (Intent FAQ)
3. Upload example utterances into either the intent or annotation framework and save
4. Import negative data set - in & out of domain negative utterances – into annotation framework and save
5. Train intent model (Annotation Framework->Train)
6. Review model statistics, confusion matrix, misclassified utterances (Dashboard)
7. Deploy model (Dashboard)
8. Test in Predict

## Intents

- Create an intent for your Amelia skill.
- Develop 20+ grammatically varied utterances for your intent and annotate them.
- Import into intent or import into annotation framework and save.
- Develop 20+ in- and out-of-domain negative utterances.
- Import and save in annotation framework.
- Create an intent model using your intent utterances and negative utterances.
- Review stats and deploy in dashboard.
- Test in Amelia Trainer->Predict.

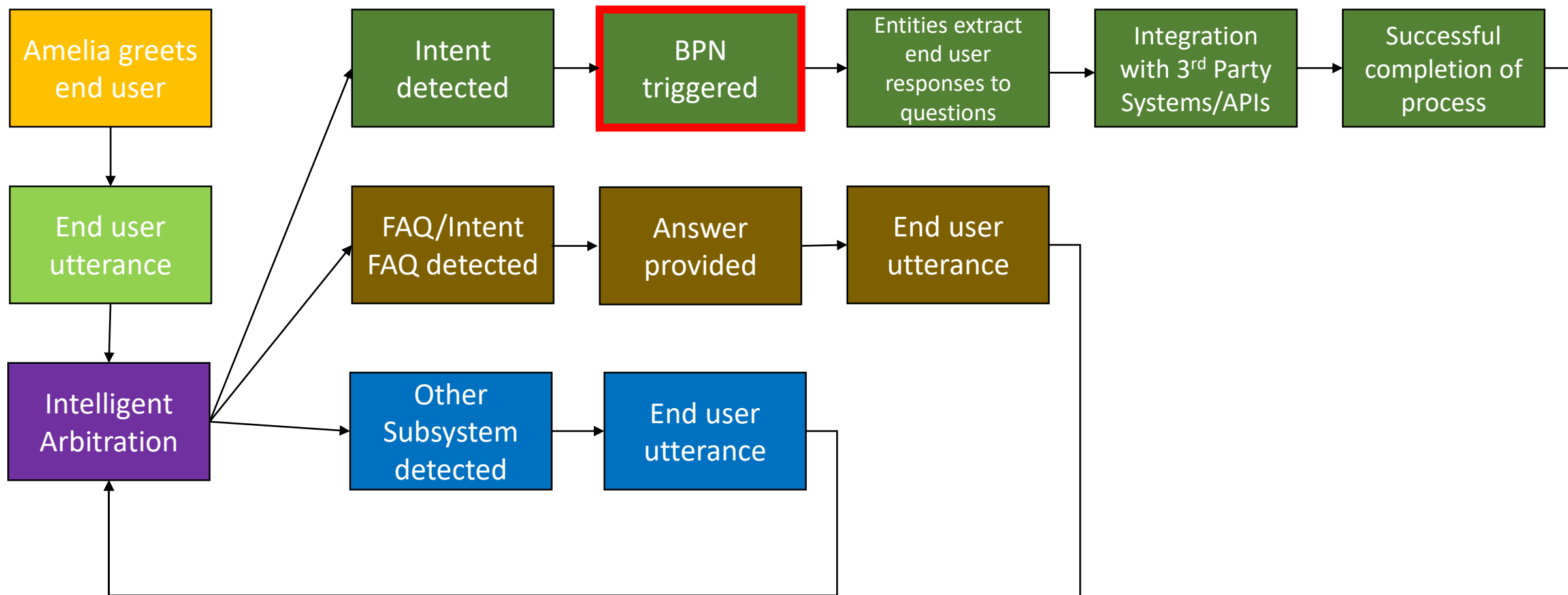


# Process Memory: Business Process Networks (BPNs)

---



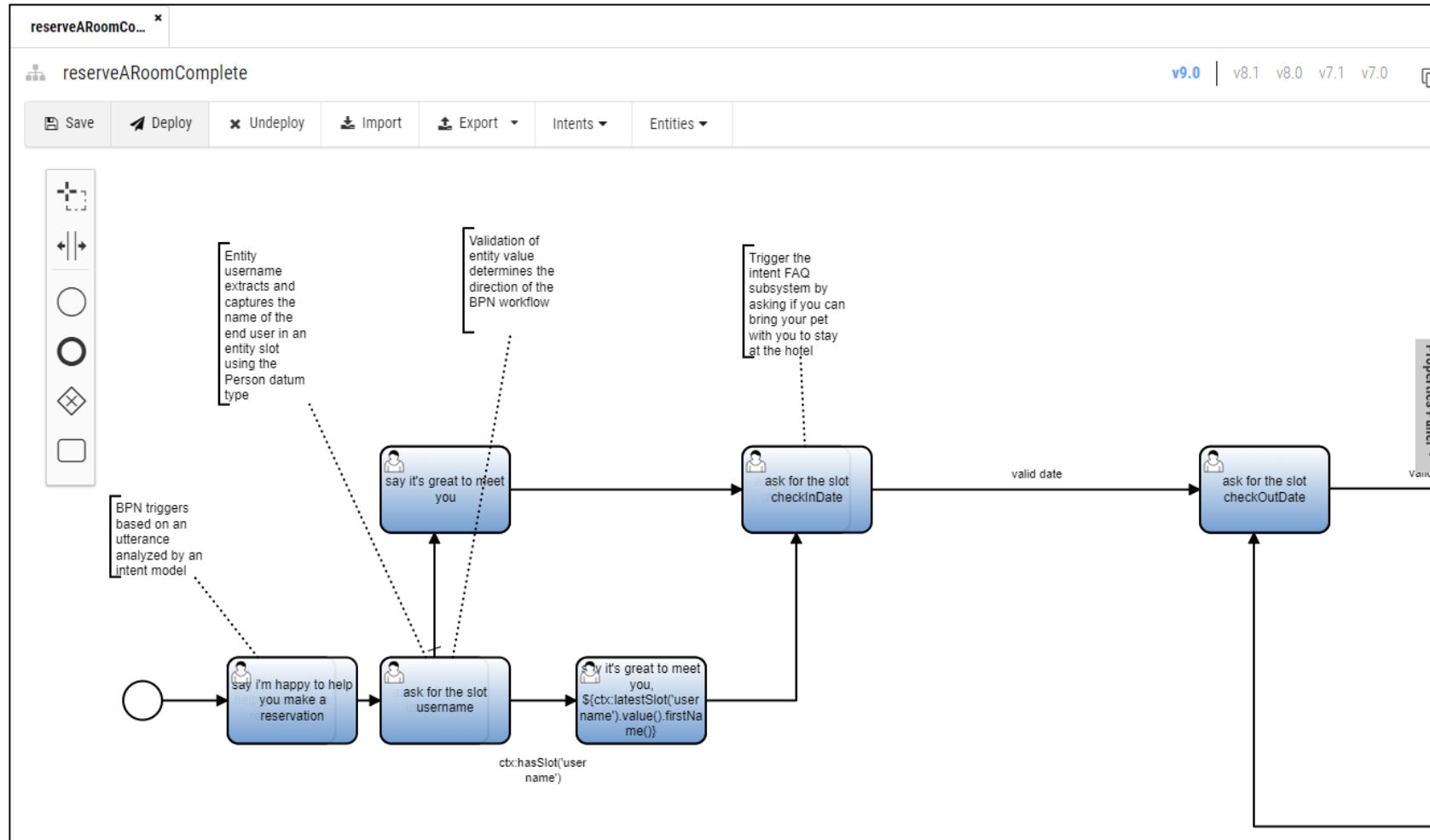
# General Amelia Conversation Flow





# Business Process Network (BPN)

Defines process flows to help end users achieve intents





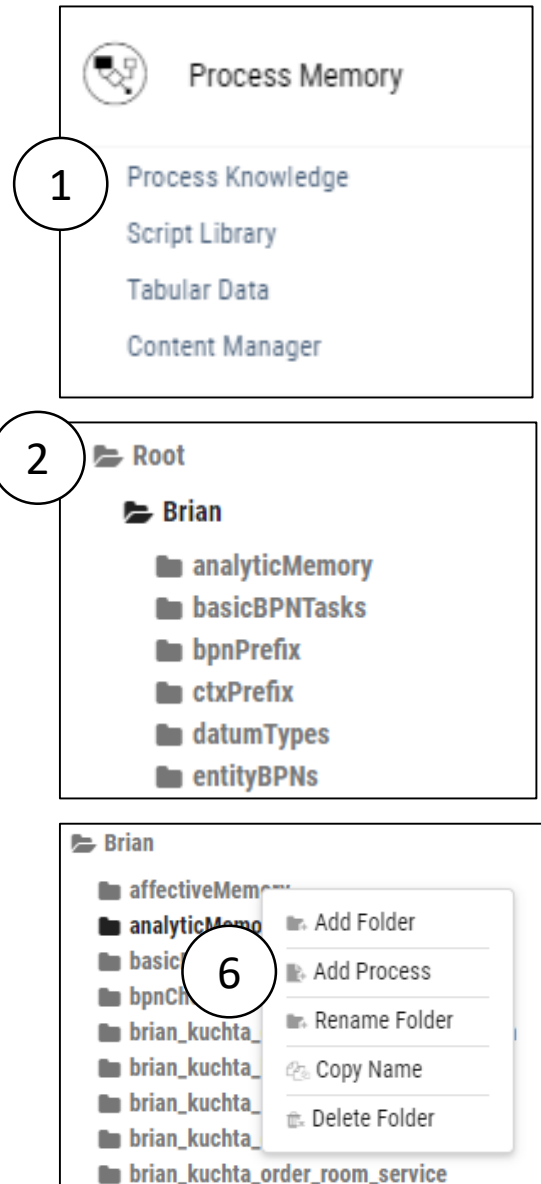
# Process Knowledge – BPN Process Creation

1. In Process Memory, click on Process Knowledge
2. Right click on Root/Domain folder
3. Choose Add Folder
  - Cannot create BPN process in Root
4. Name folder
5. Right click on folder
6. Add process
7. Name process

**Recommended Production Convention:**  
yourUseCase or your\_use\_case

**Training Convention – Folder:**  
initials\_Date  
Example: bk\_01292018

**Training Convention – Process:**  
initials\_use\_case  
Example: bk\_reserve\_a\_room

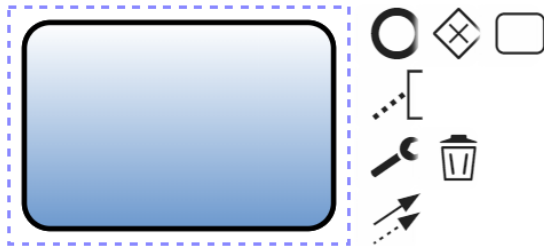




# Process Knowledge - BPN Process Design Elements

Add Process displays BPN design area

- Start and End events (programmatic only)
- Task – tells Amelia what to do
- Gateways – used for branching logic
- Lasso tool – multi-selection tool
- Create/Remove space tool



- Comment
- Wrench – user/script task
- Edge/Flow

BPN components:



Start  
Event



End  
Event



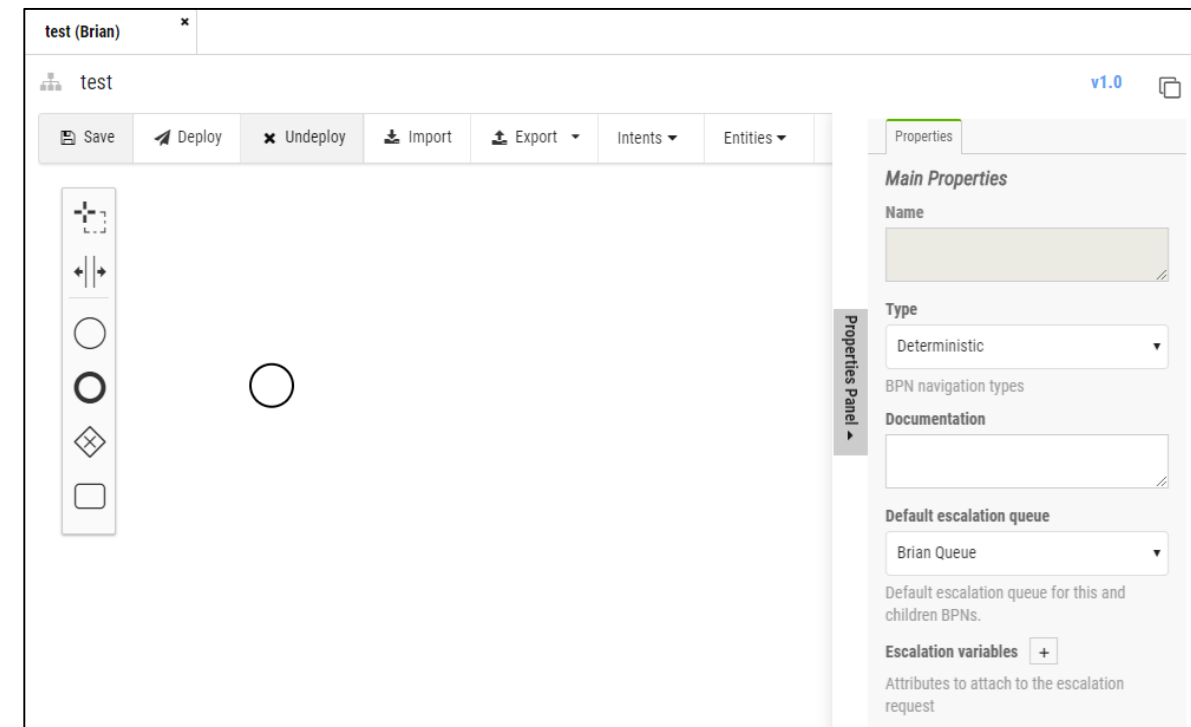
Empty Task



Say Task



Comment



# Say and Ask Tasks

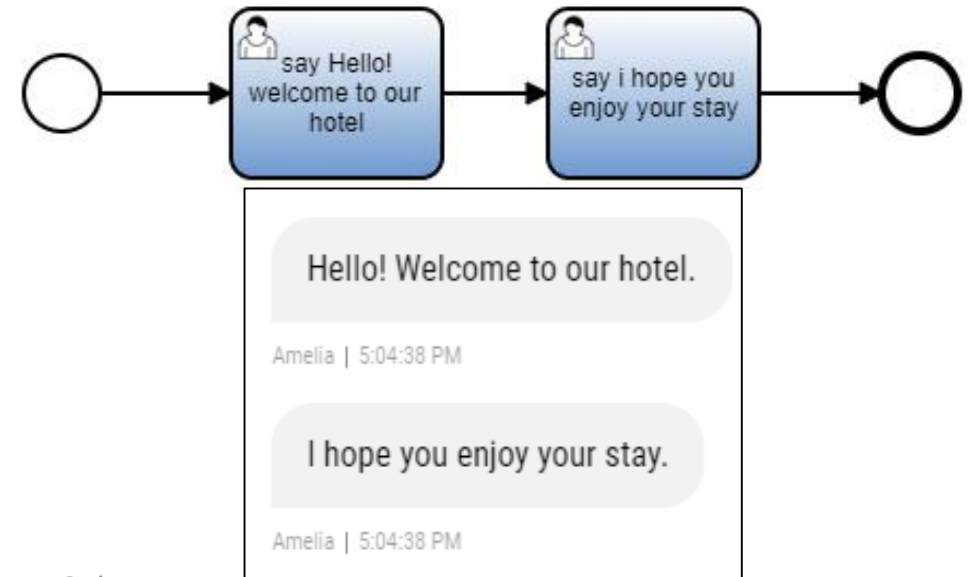
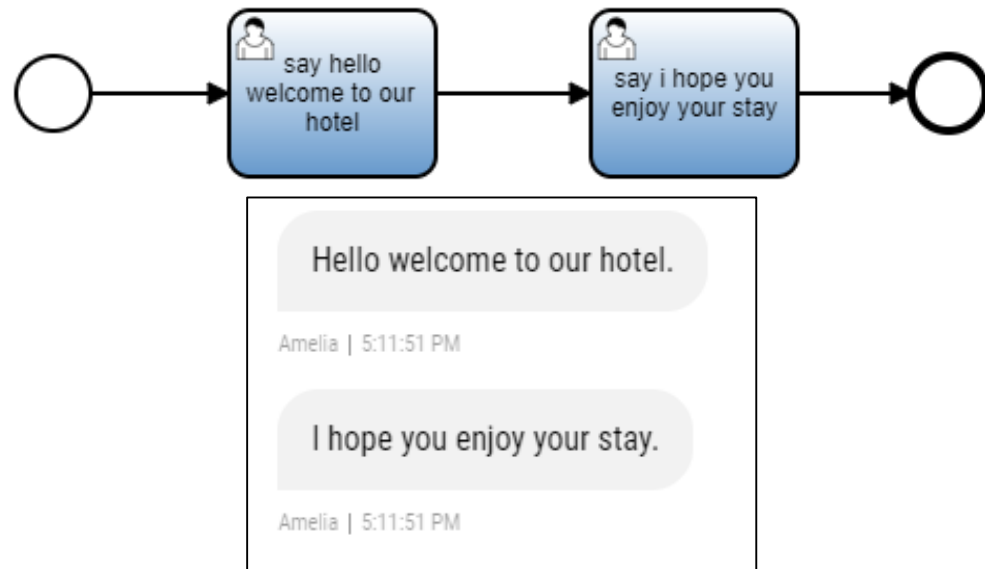
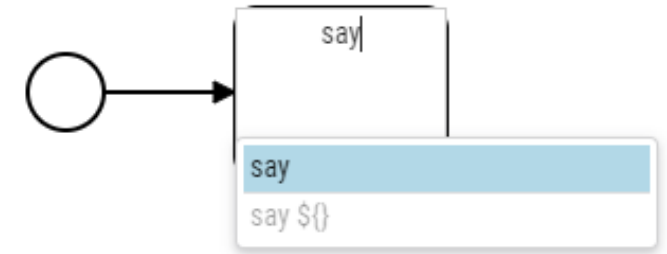
---



# Say Task

Tells Amelia what to say

- Can include punctuation in utterance
- If “ ” are used, they present in the chat
- Includes auto complete feature
- No HTML allowed
  - For HTML in conversation, will use Present task



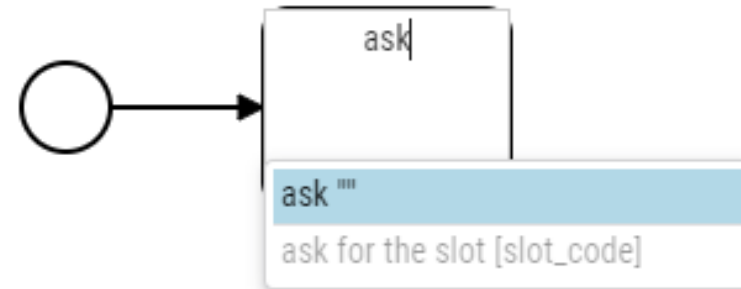
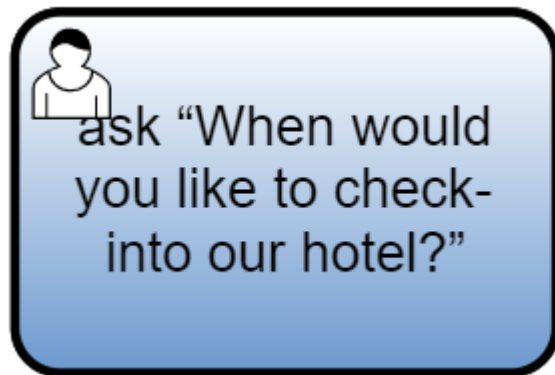


# Ask Task – Ask <Question>

During the conversation, Amelia stops and waits for a response from the end user

## Question format

- ask "<question>"
- ask "When would you like to check-into our hotel?"
- ask "Please provide me with your email address."





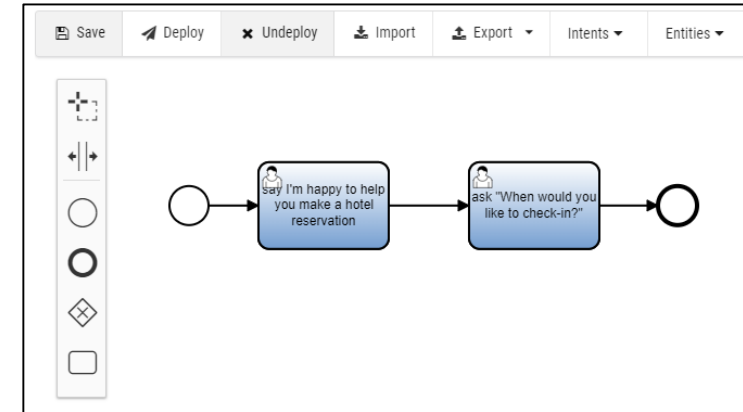


# Save and Deploy

- Save often – no syntax check
- Before deploying, add an end event for each flow endpoint
- When deploying, BPN syntax is checked

**Errors** must be fixed before BPN will deploy

The screenshot shows the IPSOFT interface with a tab titled "test2 (Brian)". The top toolbar includes buttons for Save, Deploy, Undeploy, Import, Export, Intents, and Entities. Below the toolbar, a "Validation summary - Process deploy" section displays a message: "The model you are trying to deploy is invalid. Please correct the items marked error below." A table with two columns, "Messages" and "Affected Element", lists the error: "Task type must be User, Script, Service, or Manual." under the "Messages" column and "Task" under the "Affected Element" column. At the bottom, there are "Deploy" and "Cancel" buttons.



**Warnings** should be reviewed but do not block deployment

The screenshot shows the IPSOFT interface with a tab titled "test2 (Brian)". The top toolbar includes buttons for Save, Deploy, Undeploy, Import, Export, Intents, and Entities. Below the toolbar, a "Validation summary - Process deploy" section displays a message: "The model you are trying to deploy has issues. Please verify or proceed." A table with two columns, "Messages" and "Affected Element", lists the warning: "'ctx:latestSlot('Date').value()' may not return a 'String'." under the "Messages" column and "say this is the date \${ctx:latestSlot('Date').value()}" under the "Affected Element" column. At the bottom, there are "Deploy" and "Cancel" buttons.



# Testing in Mind View – Run the Workflow

Run the workflow Process\_Name

Click the top blue icon – Process Memory

The screenshot shows the AMELIA interface with a chat window on the left and a faded Process Memory diagram on the right. The chat window displays a conversation with 'Hello Brian!' and a response from Amelia at 2:19:16 PM. The Process Memory diagram is a flowchart with various nodes and connections, but it is faded out. A text overlay in the center of the diagram reads: 'Please run a process to see Process Memory analysis'.

The screenshot shows the AMELIA interface with a chat window on the left and a detailed Process Memory diagram on the right. The chat window displays a conversation starting with 'What's your name?' and 'Hello Brian!' at 2:19:16 PM, followed by a button 'run the workflow reserveARoomComplete' at 2:31:57 PM, and then 'I'm happy to help you make a reservation.' at 2:31:58 PM, and 'What's your name?' at 2:31:58 PM. The Process Memory diagram shows a flowchart with nodes: 'say i'm happy to help you make a reservation', 'ask for the slot username', and 'say it's great to meet you'. A red box highlights the top blue icon in the diagram, which is labeled 'Process Memory'. A text overlay in the center of the diagram reads: 'BPN triggers based on an utterance analyzed by an intent model'.



# Process Memory Debug – Mind View

AMELIA Brian Kuchta

USER MIND 3D CONVERSATIONS ADMIN Brian

▼ Please hold on while I contact an agent to help you.

When would you like to check-in?

Amelia | 2:36:46 PM

none

Brian Kuchta | 2:36:51 PM

I was expecting answers such as a valid date in a format like MM/dd/yyyy, April 14th, or tomorrow. What is your choice?

Amelia | 2:36:52 PM

no

Brian Kuchta | 2:36:53 PM

Please hold on while I contact an agent to help you.

Amelia | 2:36:54 PM

Send

Process Memory

Process: reserveARoomComplete  
Version: 12.0

at to meet

ask for the slot  
checkInDate

Variables

Diagnosis

Scope	Name	Value
Process	response	Brian
Process	processName	reserveARoomComplete

Debug

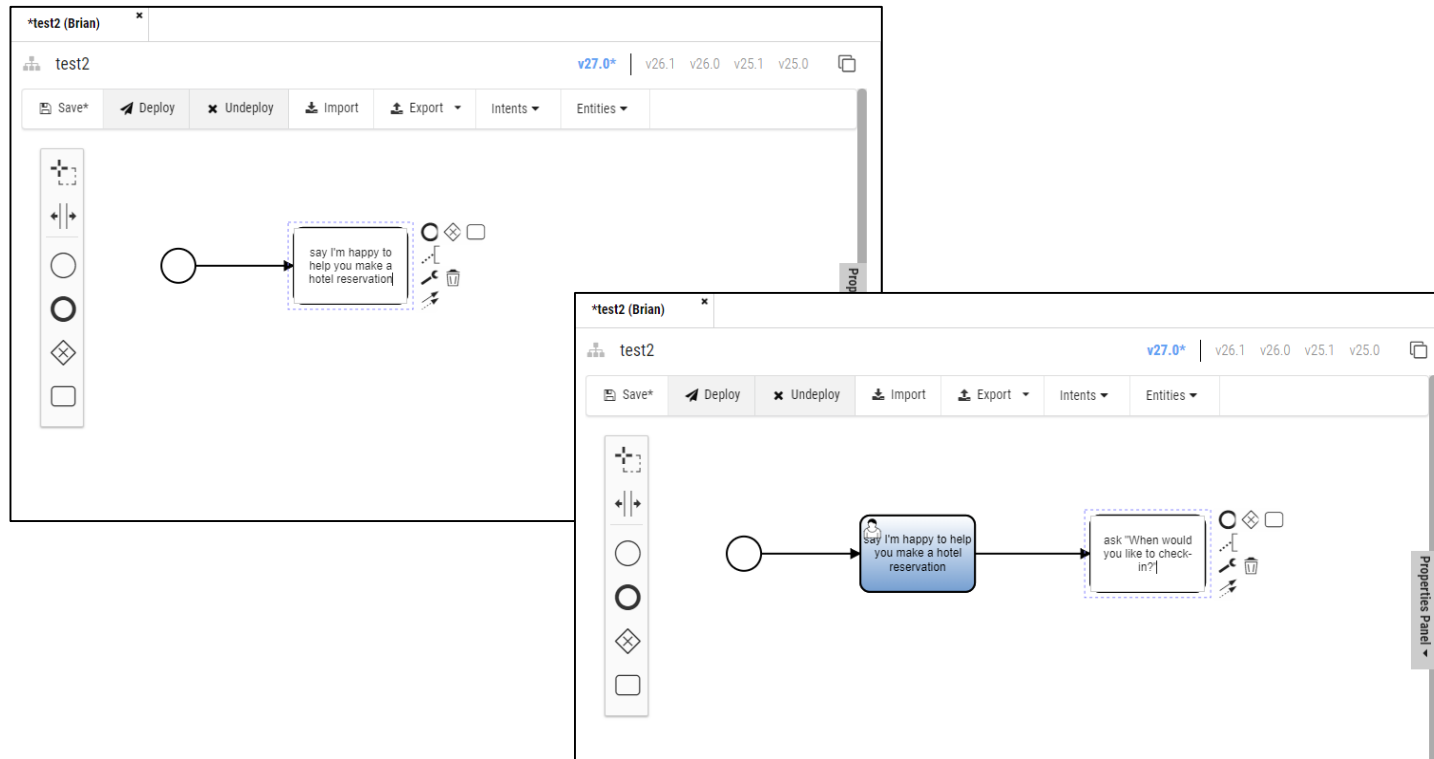
Variables

Diagnosis

Time Stamp	Severity	Message	Sou...	Name
2018-07-17 15:51:45	ERROR	net.ipsoft.ameliav3.bpn.navigation.el.DefaultBpnExpressionL...	BPN	setUnset



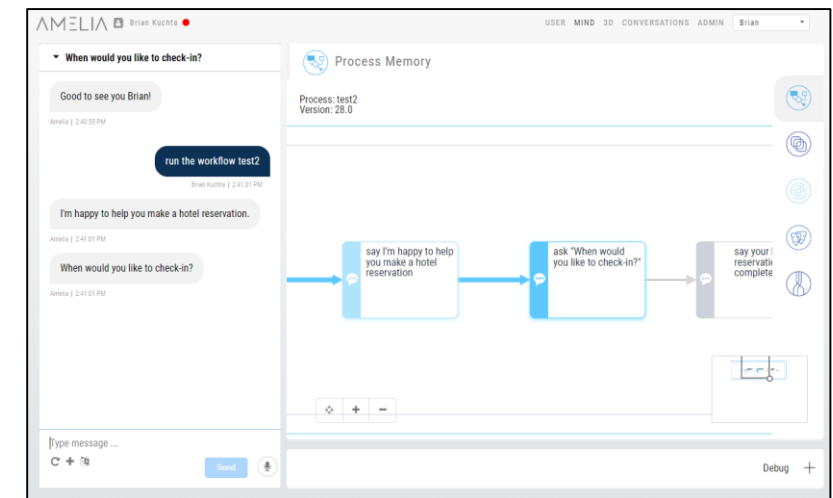
# Activity



Timing: 15 minutes  
Validation: Mind View Testing

## Say and Ask Tasks

- Start a BPN for your Amelia skill with at least one Say and Ask task.
- Save and deploy the BPN.
- Test in Mind view -> Process Memory using “run the workflow bpmName”.



## Service Prefix - response:

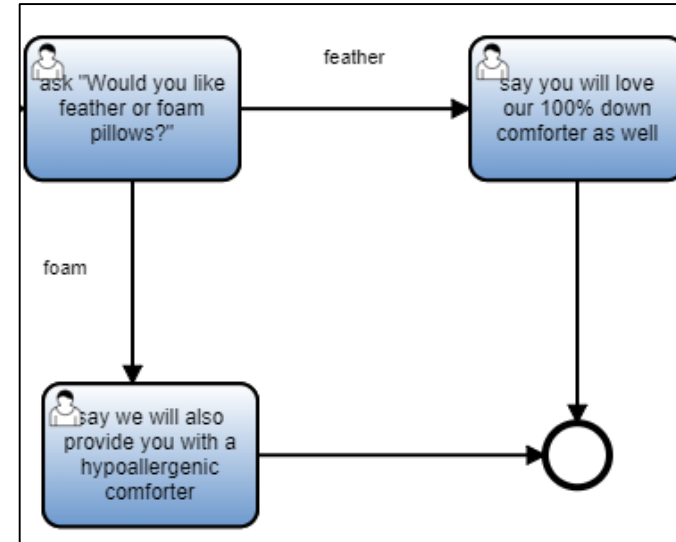
---



# response: Prefix

- **response:** user-response-related navigation
  - Obtains last utterance provided by user from ask task
  - Validates against a given value(s)

Base Syntax with matches(): response:matches(String)



Properties		Custom Properties	
<b>Main Properties</b>			
Name	<input type="text" value="feather"/>		
Expression	<input type="text" value="response:matches('feather')"/>		
Example	<input type="text"/>		

Properties Panel ▾

## Variations

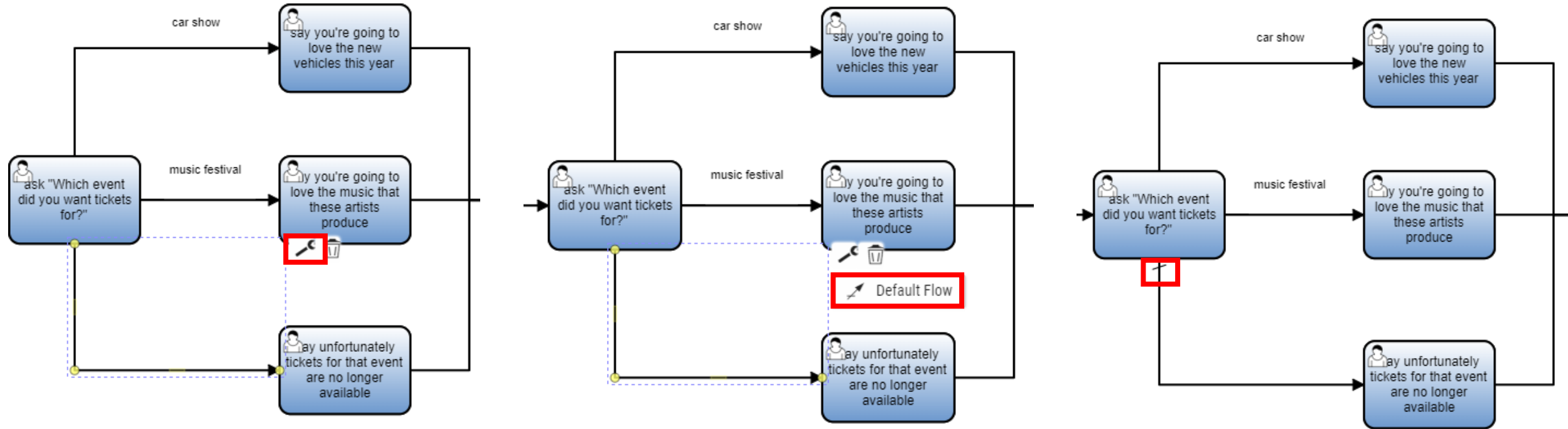
- response:matches('( ?i)') -> case insensitive
- response:matches('(breakfast | lunch | dinner)') -> or
- response:matches('.\*( ?i)(breakfast | lunch | dinner).\*') -> combination
- response:matches('[0-1]{1}[0-9]{1}/[0-3]{1}[0-9]{1}/2018')
- response =~ '[0-1]{1}[0-9]{1}/[0-3]{1}[0-9]{1}/2018' -> JEXL

## Comparison operators:

- response>
- response>=
- response<
- response<=
- response==
- response!=



# Default Flow





# response: Prefix Methods

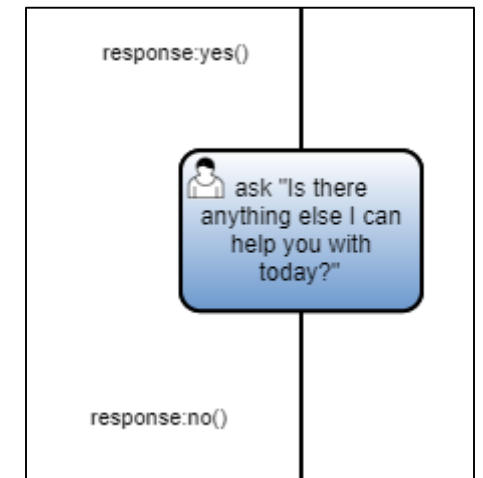
## Response: methods – Returns Boolean

- contains(String)
- containsAny(String[])
- containsNone(String[])
- endsWith(String)
- equal(Object)
- hasDigits()
- hasLetters()
- hasLettersAndDigits()
- hasLettersOrDigits()
- hasSpace()
- isAlphaNumeric()
- idk()
- in(String[])
- isDecimal()
- isInteger()
- isNumber()
- like(String) → ? single or % multiple chars
- matches(String)
- no()
- startsWith(String)
- yes()
- value() → returns String

Syntax:

Methods with parameter → response:contains(String)

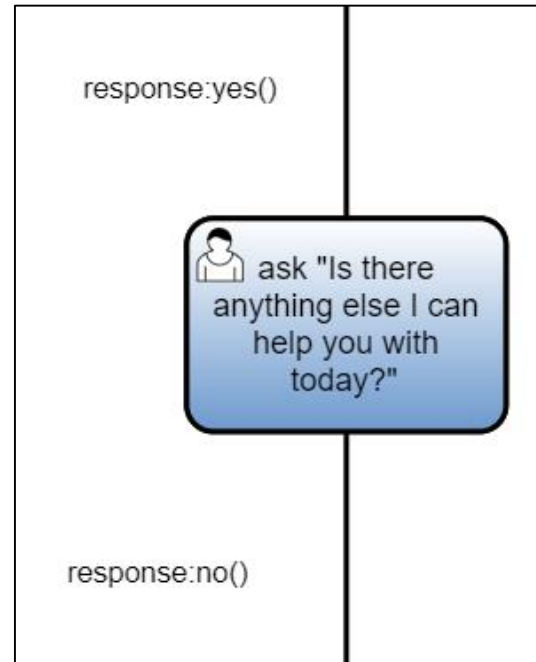
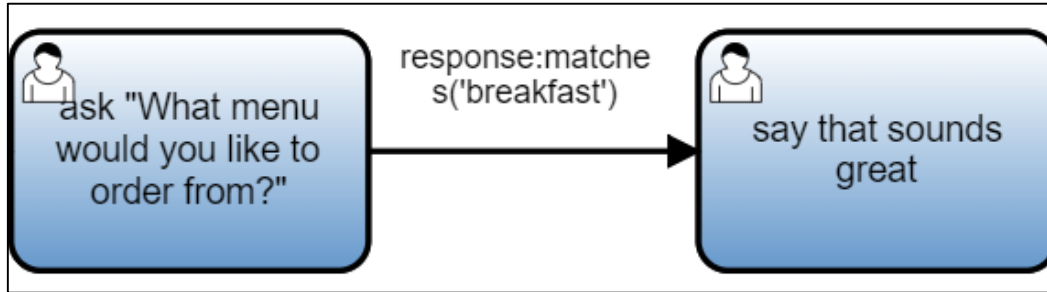
Methods without parameters → response:hasDigits()







# Activity



## response:

- Create at least two forks coming from two Ask tasks.
- Use the response: service prefix to determine the direction of the workflow.

Timing: 10 minutes

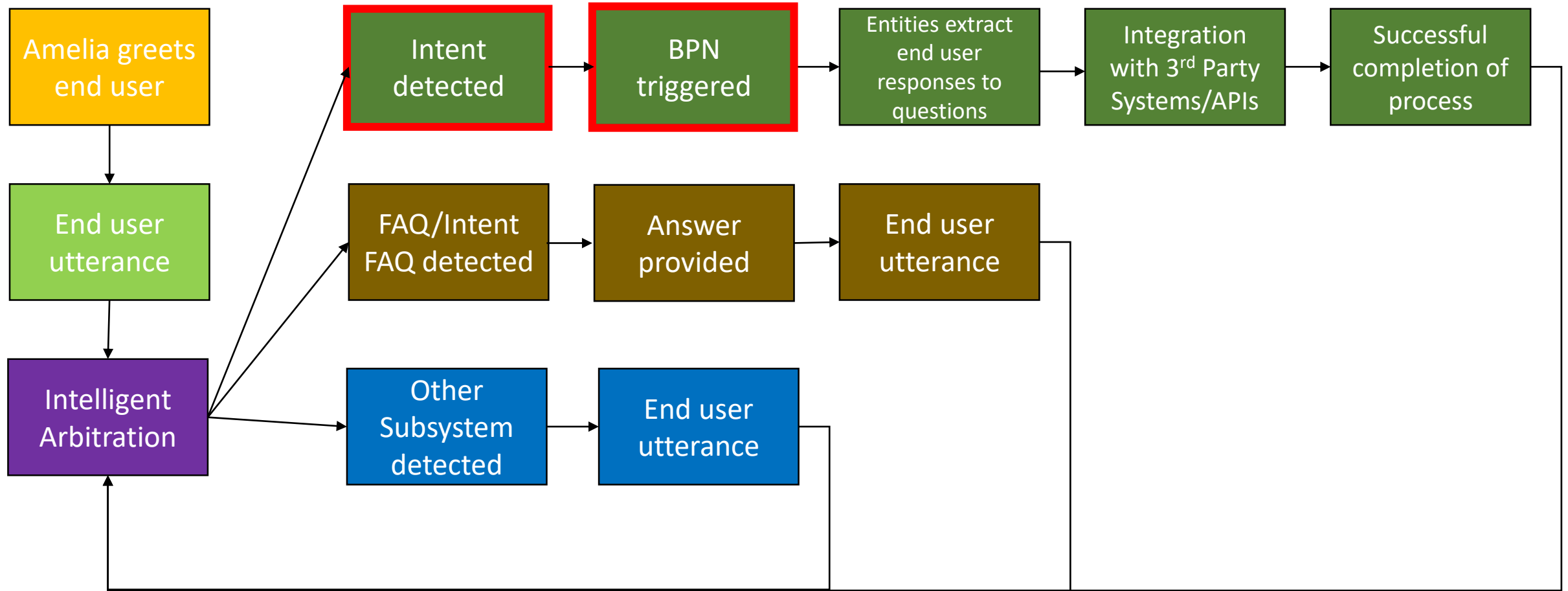
Validation: Mind View Testing

# Putting It Together: Connecting Intents and BPNs

---



# General Amelia Conversation Flow





# Connecting Intents to BPNs

Intents

Intents Entities Predict Annotate Dashboard

Q Name, BPN, or FAQ

Intent Name Description Actions

reserveARoom	Used to book a hotel room	
--------------	---------------------------	--

Bulk Actions ☐ Select All

Add Intents Train Predict

1

Amelia Trainer -> Intents

1. Click on intent name/pencil
2. For “When the intent is identified...”, choose Execute Process
3. For “Execute the process...”, choose the appropriate BPN

reserveARoom

Used to book a hotel room

Save changes Revert changes Disable intent Delete

When intent is identified... Execute the process...

Execute Process reserveARoomComplete

When resuming the process, Amelia asks...

Would you like to continue with your hotel reservation?

The user wants to...

e.g. "reset a password"

2 3



# Deploy Model

4. Go to Amelia Trainer->Dashboard
5. Deploy the correct intent model

Dashboard

4

Intents

Entities












Predict

Annotate

Dashboard

Model Name



Model Name	Revision	Created By	Utterances	Algorithm	Actions	Logs	Stats	Status
> reserveARoomBaseCase	v.2.0	Brian Kuchta	224	PAC	5  			 deployed
> reserveARoomPABase	v.3.0	Brian Kuchta	224	PAC	  			 ready



# Activity

**reserveARoom**

Save changes

Revert changes

Disable intent

Delete

Used to book a hotel room

When intent is identified...

Execute Process

Execute the process...  
reserveARoomComplete

When resuming the process, Amelia asks...

Would you like to continue with your hotel reservation?

The user wants to...

e.g. "reset a password"

Timing: 10 minutes

Validation: Mind View Testing

## Intents and BPNs

- Connect your intent to your BPN.
- Be sure your intent model is deployed in Amelia Trainer-> Dashboard.
- In Mind View, test various utterances to launch your BPN.
  - Do NOT use run the workflow.
- Notice what happens when your Intent is not triggered and your BPN does not launch.

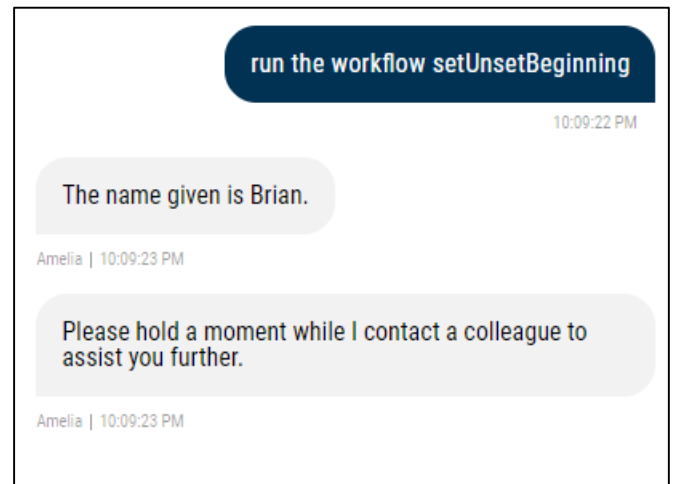
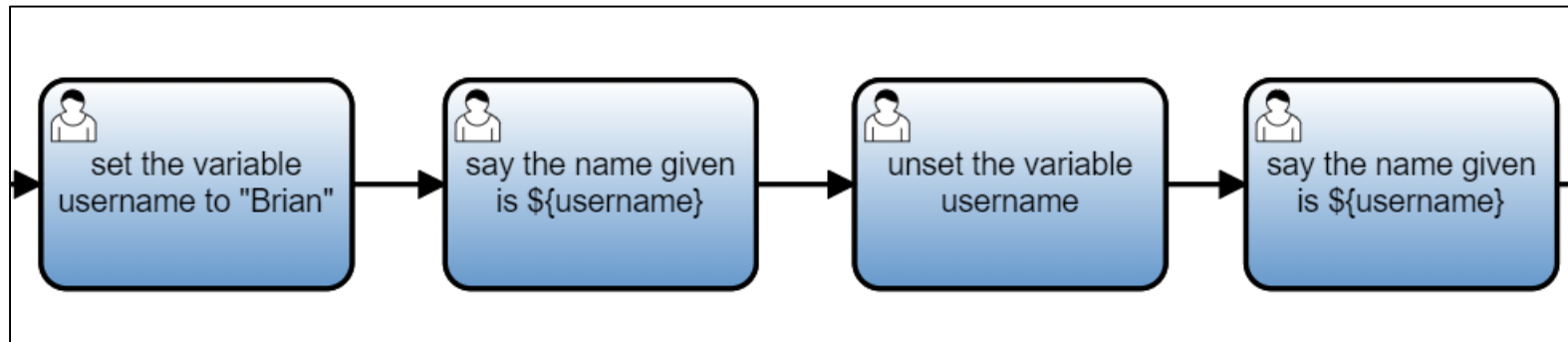
# Additional BPN Functionality

---



# Set/Unset the Variable Task – Process Scope

- set the variable <variableName> to <variableValue>
- set the variable username to “John”
- set the variable number to 85
- unset the variable -> removes the entire variable

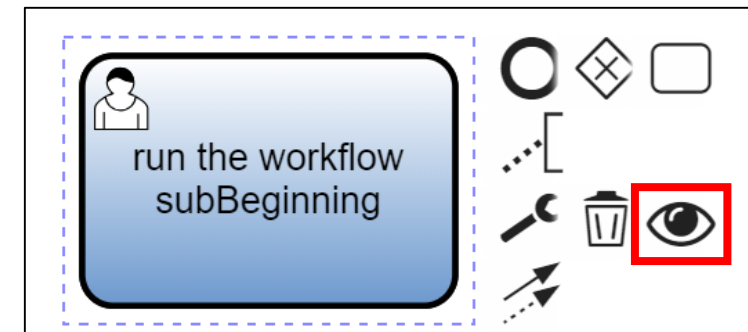
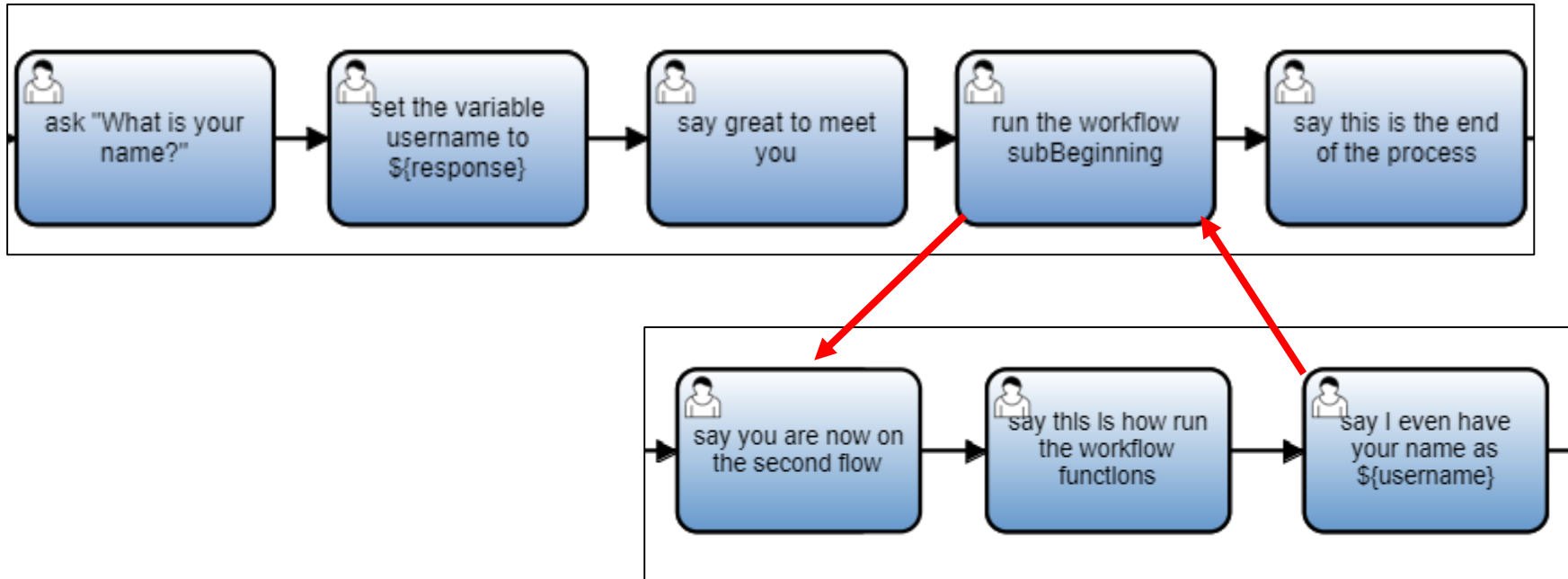






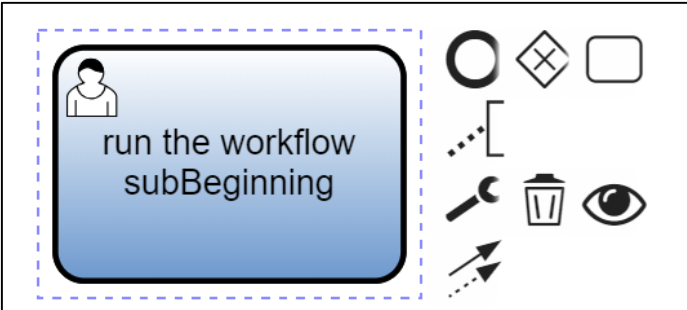
# Run the Workflow Task

run the workflow processName





# Run the Workflow – Variable Propagation Property



Properties Custom Properties

**Main Properties**

Name  
run the workflow  
runTheWorkflowExecutionVarSub

Variable Propagation  
⇌ Bidirectional

Type of variable propagation to and from the child process.

Outgoing variables +

Incoming variables +

Properties Custom Properties

**Main Properties**

Name  
run the workflow  
runTheWorkflowExecutionVarSub

Variable Propagation  
⇌ Bidirectional

⇌ Bidirectional  
→ Push only  
← Pull only  
None

Controls propagation of process scope variables

Properties Custom Properties

**Main Properties**

Name  
run the workflow  
runTheWorkflowExecutionVarSubSpeci

Variable Propagation  
⇌ Bidirectional

Type of variable propagation to and from the child process.

Outgoing variables +

username x

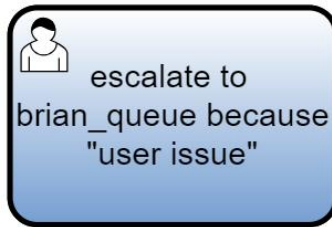
Incoming variables +

If no process scope variable is designated for outgoing/incoming variables, all process scope variables are passed



# Escalate Because, Escalate To, Escalate To...Because Tasks

- Sends conversation to live agent in Conversations view
- Provides reason for escalation
- Can designate specific queue to where escalation is sent
- No further tasks should come after it in that flow



Active Conversations

Domains

Queues

Agents

Auto-Refresh

My Queues

Queues Summary

Conversations Summary

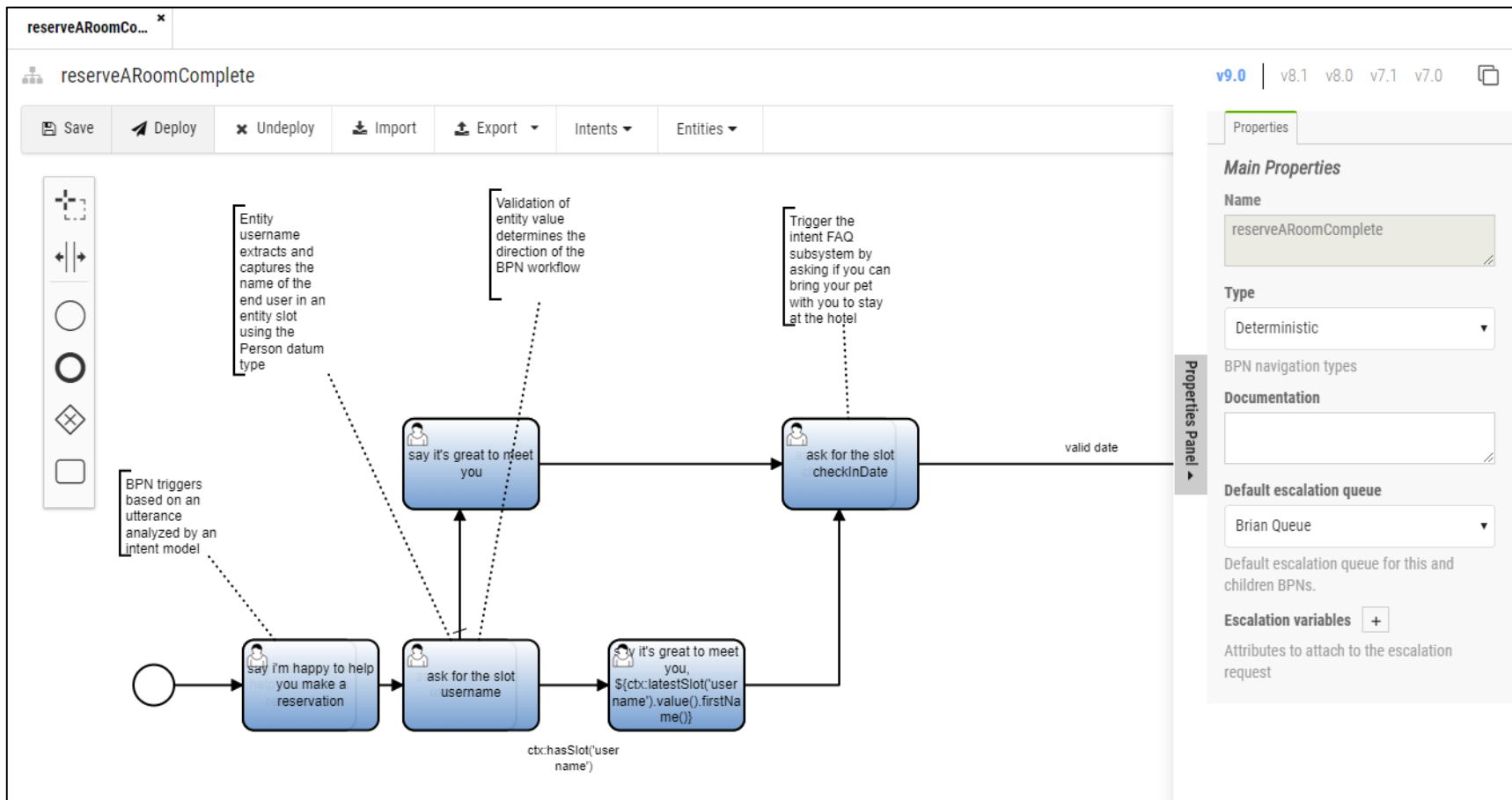
ID	Domain	User	Agent	Escalation Status	Escalation Queue	Escalation Reason	P-SLA	Created	Queued	Answer Speed	Handle Time	Actions
LEVIURLTYAIAA-1	Brian	Brian Kuchta	Amelia	QUEUED	Brian Queue	user issue	7/17/2018, 5:34:01 PM	7/17/2018, 5:32:56 PM	7/17/2018, 5:33:01 PM			

1 Conversations, Page 1 of 1



# Setting the Default Escalation Queue – BPN Level

If an escalation occurs during a BPN (but not using an escalate to task), escalates to the BPN default escalation queue





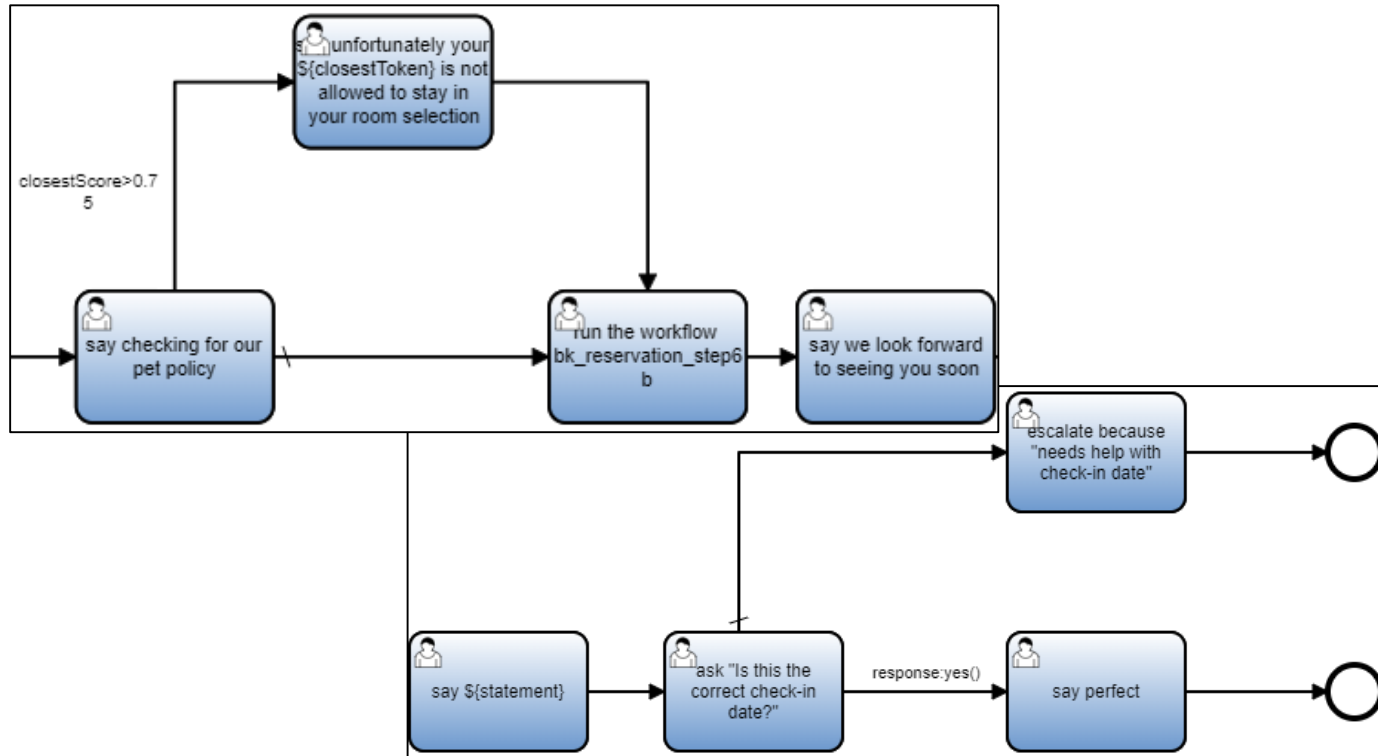
# Close the Conversation

- Closes the chat
- No further tasks should come after it in that flow





# Activity



Timing: 15 minutes

Validation: Mind View Testing

## BPN Tasks

- Create a second BPN.
- Use a modular approach by calling this “sub-BPN” using the run the workflow command.
- Add an escalate to... because task somewhere in one of your flows.
- Add a close the conversation somewhere in one of your flow.
- Test in Mind view using your Intent.
  - Do NOT use run the workflow.



# Questions



# AMELIA VE

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Thank You



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