Pega Decision Hub is a powerful decisioning platform that enables businesses to automate and optimize decision-making processes.

To incrementally rollout features in Pega Decision Hub, follow these steps:

1. **Create a new branch**: In Pega Decision Hub, create a new branch for the feature rollout. This allows you to isolate the changes and test them independently.
2. **Develop and test the feature**: Develop the new feature on the new branch and test it thoroughly to ensure it works as expected.
3. **Use decisioning simulation**: Use Pega's decisioning simulation capability to test the feature with sample data and validate the expected outcomes.
4. **Configure feature toggles**: Use feature toggles to control the rollout of the feature. Feature toggles allow you to enable or disable the feature for specific users, groups, or applications.
5. **Rollout to a small audience**: Rollout the feature to a small audience, such as a pilot group, to gather feedback and validate the feature in a production-like environment.
6. **Monitor and analyse**: Monitor the feature's performance and analyse the results to identify any issues or areas for improvement.
7. **Refine and iterate**: Refine the feature based on the feedback and analysis, and iterate on the rollout process until you're satisfied with the results.
8. **Rollout to a wider audience**: Based on confidence in the feature's performance, rollout it to a wider audience, using the feature toggles to control the rollout.
9. **Continuously monitor and improve**: Continuously monitor the feature's performance and make improvements as needed.

# How to Incrementally Rollout Features in Pega Decision Hub

Pega Decision Hub is a powerful tool for creating and managing decision strategies that can deliver personalized and optimized customer interactions. One of the challenges of using Pega Decision Hub is how to rollout new features or changes to existing features without disrupting the existing customer experience or impacting the business outcomes. This document will explain how to use the feature toggle technique to incrementally rollout features in Pega Decision Hub, using an example scenario.

## What is Feature Toggle?

Feature toggle is a technique that allows you to turn on or off a feature or a part of a feature at runtime, without deploying new code. This way, you can test the feature in production with a small subset of customers, monitor the results, and gradually expand the exposure until you're ready to launch the feature to everyone. Feature toggle also gives you the ability to roll back the feature quickly if something goes wrong, by simply turning it off.

## Why Use Feature Toggle in Pega Decision Hub?

Pega Decision Hub enables you to design, execute, and monitor decision strategies that can deliver personalized and optimized customer interactions across channels and touchpoints. However, introducing new features or changes to existing features in your decision strategies can be risky, as they can affect the customer experience and the business outcomes.

For example, you may want to introduce a new offer or a new eligibility rule in your decision strategy, but you're not sure how it will affect the customer response rate, the revenue, or the customer satisfaction. You don't want to launch the feature to everyone at once, but you also don't want to wait for a long time to test the feature in production.

Using feature toggle in Pega Decision Hub can help you mitigate these risks, by allowing you to rollout the feature incrementally, starting with a small percentage of customers, and increasing the exposure gradually, based on the results and feedback. You can also use feature toggle to perform A/B testing, where you compare the performance of the feature with a control group that doesn't receive the feature. This way, you can measure the impact of the feature and make data-driven decisions about whether to launch the feature to everyone or not.

## How to Implement Feature Toggle in Pega Decision Hub?

There are different ways to implement feature toggle in Pega Decision Hub, depending on your use case and preferences. In this document, we will use the following example scenario to illustrate one of the possible approaches:

You are a marketer working for a bank, and you want to introduce a new credit card offer in your decision strategy. The offer is a 10% cashback on online purchases for the first three months. However, you're not sure how the offer will affect the customer acceptance rate, the revenue, and the risk. You want to rollout the offer incrementally, starting with 10% of the eligible customers, and increasing the exposure by 10% every week, until you reach 100%. You also want to compare the performance of the offer with a control group that doesn't receive> the offer, to measure the impact of the offer.

To implement feature toggle in Pega Decision Hub for this scenario, you can follow these steps:

### Step 1: Create a Custom Property for Feature Toggle

The first step is to create a custom property that will store the value of the feature toggle for each customer. This property will be used to determine whether the customer is eligible for the new offer or not. You can name the property as isMemberInControlGroup, and set its type as Boolean. The property will have a value of true if the customer is in the control group, and false otherwise.

You can create the custom property in Pega Decision Hub by following these steps:

- Go to App Studio > Data types > Customer

- Click on +Add field

- Enter the name as isMemberInControlGroup

- Select the type as Boolean

- Click on Save

### Step 2: Create a Decision Table for Feature Toggle

The second step is to create a decision table that will assign the value of the feature toggle property for each customer, based on their member ID range. The member ID range is a unique identifier for each customer, and it can be used to randomly select a percentage of customers for the feature toggle. For example, you can use the following logic:

- If the member ID ends with 0, 1, or 2, then the customer is in the control group, and the feature toggle property is set to true.

- If the member ID ends with 3, 4, or 5, then the customer is in the first rollout group, and the feature toggle property is set to false. This group will receive the new offer when the rollout percentage is 10% or more.

- If the member ID ends with 6, 7, or 8, then the customer is in the second rollout group, and the feature toggle property is set to false. This group will receive the new offer when the rollout percentage is 20% or more.

- If the member ID ends with 9, then the customer is in the third rollout group, and the feature toggle property is set to false. This group will receive the new offer when the rollout percentage is 30% or more.

You can create the decision table in Pega Decision Hub by following these steps:

- Go to Dev Studio > Records > Decision > Decision table

- Click on +Create

- Enter the label as Deciding isMemberInControlGroup Based on Member ID Range

- Enter the applies to class as Customer

- Click on Create and open

- In the Input section, add the property MemberID as the input parameter, and set its type as Text

- In the Output section, add the property isMemberInControlGroup as the output parameter, and set its type as Boolean

- In the Rows section, add four rows with the following values:

|  |  |
| --- | --- |
| MemberID | isMemberInControlGroup |
| Ends with 0, 1, or 2 | true |
| Ends with 3, 4,> or 5 | false |
| Ends with 6, 7, or 8 | false |
| Ends with 9 | false |

- Click on Save

**Refer Appendix – A for other logic for member id range.**

### Step 3: Create a Data Flow for Feature Toggle

The third step is to create a data flow that will execute the decision table for each customer and update the feature toggle property in the customer data set. The data flow will take the customer data set as the input, and output the updated customer data set with the feature toggle property assigned. You can run the data flow manually or schedule it to run periodically, depending on your needs.

You can create the data flow in Pega Decision Hub by following these steps:

- Go to Dev Studio > Records > Data > Data flow

- Click on +Create

- Enter the label as Assigning Feature Toggle Property Based on Member ID Range

- Enter the applies to class as Customer

- Click on Create and open

- In the Diagram tab, drag and drop the following components from the palette to the canvas:

- A data set shape, and set its name as Customer

- A decision shape, and set its name as Deciding isMemberInControlGroup Based on Member ID Range

- A data set shape, and set its name as Customer (Updated)

- Connect the components as follows:

- Connect the Customer data set shape to the Deciding isMemberInControlGroup Based on Member ID Range decision shape

- Connect the Deciding isMemberInControlGroup Based on Member ID Range decision shape to the Customer (Updated) data set shape

- Click on Save

### Step 4: Create a Proposition Filter for Feature Toggle

The fourth step is to create a proposition filter that will use the feature toggle property to filter out the customers who are not eligible for the new offer. The proposition filter will take the propositions data set and the customer data set as the inputs, and output the filtered propositions data set with only the relevant offers for each customer. You can use the proposition filter in your decision strategy to deliver the personalized offers to your customers.

You can create the proposition filter in Pega Decision Hub by following these steps:

- Go to Dev Studio > Records > Decision > Proposition filter

- Click on +Create

- Enter the label as Filtering Propositions Based on Feature Toggle Property

- Enter the applies to class as Propositions

- Click on Create and open

- In the Criteria tab, add the following criteria:

- Name: New offer eligibility

- Expression: .PropositionName = "New Alert commericial" and Customer.isMemberInControlGroup = false

- Click on Save

### Step 5: Use the Proposition Filter in Your Decision Strategy

The final step is to use the proposition filter in your decision strategy to deliver the personalized offers to your customers. You can use the proposition filter as a component in your decision strategy, and connect it to the propositions data set and the customer data set. The proposition filter will output the filtered propositions data set with only the relevant offers for each customer, based on> the feature toggle property.

You can use the proposition filter in your decision strategy by following these steps:

- Go to App Studio > Decisioning > Strategies

- Open the decision strategy that you want to use for delivering the offers

- Drag and drop the proposition filter component from the palette to the canvas, and set its name as Filtering Propositions Based on Feature Toggle Property

- Connect the propositions data set shape to the input of the proposition filter component

- Connect the customer data set shape to the customer input of the proposition filter component

- Connect the output of the proposition filter component to the next component in your decision strategy

- Click on Save

## How to Rollout the Feature Incrementally?

To rollout the feature incrementally, you can use the feature toggle percentage parameter in your decision strategy. This parameter will control the exposure of the feature to the customers, based on their member ID range. You can set the value of the parameter manually or dynamically, depending on your needs.

For example, you can set the value of the parameter as follows:

- To rollout the feature to 10% of the customers, set the value of the parameter to 10. This will enable the feature for the customers whose member ID ends with 3, 4, or 5.

- To rollout the feature to 20% of the customers, set the value of the parameter to 20. This will enable the feature for the customers whose member ID ends with 3, 4, 5, 6, 7, or 8.

- To rollout the feature to 30% of the customers, set the value of the parameter to 30. This will enable the feature for the customers whose member ID ends with 3, 4, 5, 6, 7, 8, or 9.

- To rollout the feature to 100% of the customers, set the value of the parameter to 100. This will enable the feature for all the customers.

You can set the value of the parameter in your decision strategy by following these steps:

- Go to App Studio > Decisioning > Strategies

- Open the decision strategy that you're using for delivering the offers

- Drag and drop the parameter component from the palette to the canvas, and set its name as Feature Toggle Percentage

- Set the value of the parameter as per your requirement

- Connect the parameter component to the decision table component that decides the isMemberInControlGroup property based on the member ID range

- Click on Save

## How to Compare the Performance of the Feature with the Control Group?

To compare the performance of the feature with the control group, you can use the reporting and analytics tools in Pega Decision Hub. You can create reports and dashboards that show the key metrics and indicators of the feature and the control group, such as the acceptance rate, the revenue, the risk, the customer satisfaction, etc. You can also use the simulation and champion/challenger features to test and compare different versions of your decision strategy, and measure the impact of the feature.

You can create reports and dashboards in Pega Decision Hub by following these steps:

- Go to App Studio > Decisioning > Reports

- Click on +Create report

- Enter the name and description of the report

- Select the data source and the fields that you want to include in the report

- Define the filters and the aggregations that you want to apply to the data

- Choose the chart type and the layout that you want to use for the report

- Click on Save

You can create dashboards in Pega Decision Hub by following these steps:

- Go to App Studio > Decisioning > Dashboards

- Click on +Create dashboard

- Enter the name and description of the dashboard

- Select the reports that you want to include in the dashboard

- Arrange the reports in the dashboard layout

- Click on Save

You can use the simulation and champion/challenger features in Pega Decision Hub by following these steps:

- Go to Dev Studio > Decisioning > Simulation

- Click on +Create

- Enter the name and description of the simulation

- Select the decision strategy that you want to test

- Define the input data and the output data for the simulation

- Configure the settings and the parameters for the simulation

- Click on Run

- Analyze the results and the statistics of the simulation

- Click on Save

- Go to Dev Studio > Decisioning > Champion/Challenger

- Click on +Create

- Enter the name and description of the champion/challenger

- Select the decision strategy that you want to compare

- Define the challenger versions and the distribution percentages for each version

- Configure the settings and the parameters for the champion/challenger

- Click on Save

**Note : Pega flow steps has been documented for reference purpose only. Pega dev team will implement the process steps as per the Aetna Alert Convention.**

**Appendix – A**

### Create a Decision Table for Feature Toggle - Member ID range Approach.

**Deciding isMemberInControlGroup Based on Member ID Range in a Pega Decision Table**

**Understanding the Requirements**

Before diving into the solution, let's clarify the requirements:

* **Member ID Range:** A specific range of member IDs will be assigned to the control group.
* **Decision Table:** A Pega decision table will be used to determine if a member belongs to the control group based on their member ID.

**Designing the Decision Table**

**Decision Table Structure:**

|  |  |
| --- | --- |
| **Condition** | **Action** |
| MemberID >= LowerControlGroupLimit AND MemberID <= UpperControlGroupLimit | IsMemberInControlGroup = True |
| Otherwise | IsMemberInControlGroup = False |

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**Parameters:**

* **LowerControlGroupLimit:** The starting member ID for the control group.
* **UpperControlGroupLimit:** The ending member ID for the control group.
* **MemberID:** The member ID of the current member being evaluated.

**Implementing the Decision Table**

1. **Create a Decision Table:**
   * Create a new decision table in Pega to determine if a member is in the control group.
   * Add the necessary parameters (LowerControlGroupLimit, UpperControlGroupLimit, and MemberID).
2. **Define Conditions and Actions:**
   * Create two conditions based on the member ID range:
     + MemberID >= LowerControlGroupLimit AND MemberID <= UpperControlGroupLimit
     + Otherwise
   * Create two actions:
     + IsMemberInControlGroup = True
     + IsMemberInControlGroup = False
3. **Configure Parameters:**
   * Set the values for LowerControlGroupLimit and UpperControlGroupLimit based on your control group definition.
4. **Utilize the Decision Table:**
   * Use the decision table in your Pega application to determine if a member is in the control group.
   * Pass the member ID as an input to the decision table and retrieve the IsMemberInControlGroup output.

**Considerations and Best Practices**

* **Data Type:** Ensure that the member ID data type is compatible with the comparison operators used in the decision table.
* **Performance:** For large datasets, consider performance implications of using decision tables. Evaluate alternative approaches if necessary.
* **Control Group Size:** Determine the optimal size of the control group based on your experiment or analysis requirements.
* **Randomization:** While using member ID ranges might be convenient, consider using random sampling for better control group representation.
* **Dynamic Updates:** If the control group needs to be adjusted, update the decision table parameters accordingly.

**Example Pega Rule**

Code snippet

Rule-Obj-DecideControlGroup

When

MemberID >= LowerControlGroupLimit

MemberID <= UpperControlGroupLimit

Then

IsMemberInControlGroup = True

Else

IsMemberInControlGroup = False

Pega decision table to determine if a member belongs to the control group based on their member ID range.