Cross-Sell on the Web

STUDENT GUIDE

PEGA® Academy

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Next-Best-Action on digital

Description

Learn about a typical cross-selling use case on the web channel and its four phases of implementation to improve 1-to-1 customer engagement, drive sales, and deliver Next-Best-Actions in real time.

Learning objectives

- Describe a typical cross-selling use case on the web channel
- List the four phases of use case implementation

Business use case: Cross-sell on the web

Introduction

Pega Customer Decision Hub's Next-Best-Action Designer lets you configure how you want the always-on brain to select the best offer for a customer. The best offer is the result of a series of decisions that are executed in a hierarchical fashion by the brain. Cross-selling on the web channel will help you improve 1-to-1 customer engagement, drive sales, and deliver Next-Best-Actions in real-time.

Transcript

This video describes a typical cross-selling use case on the web channel.

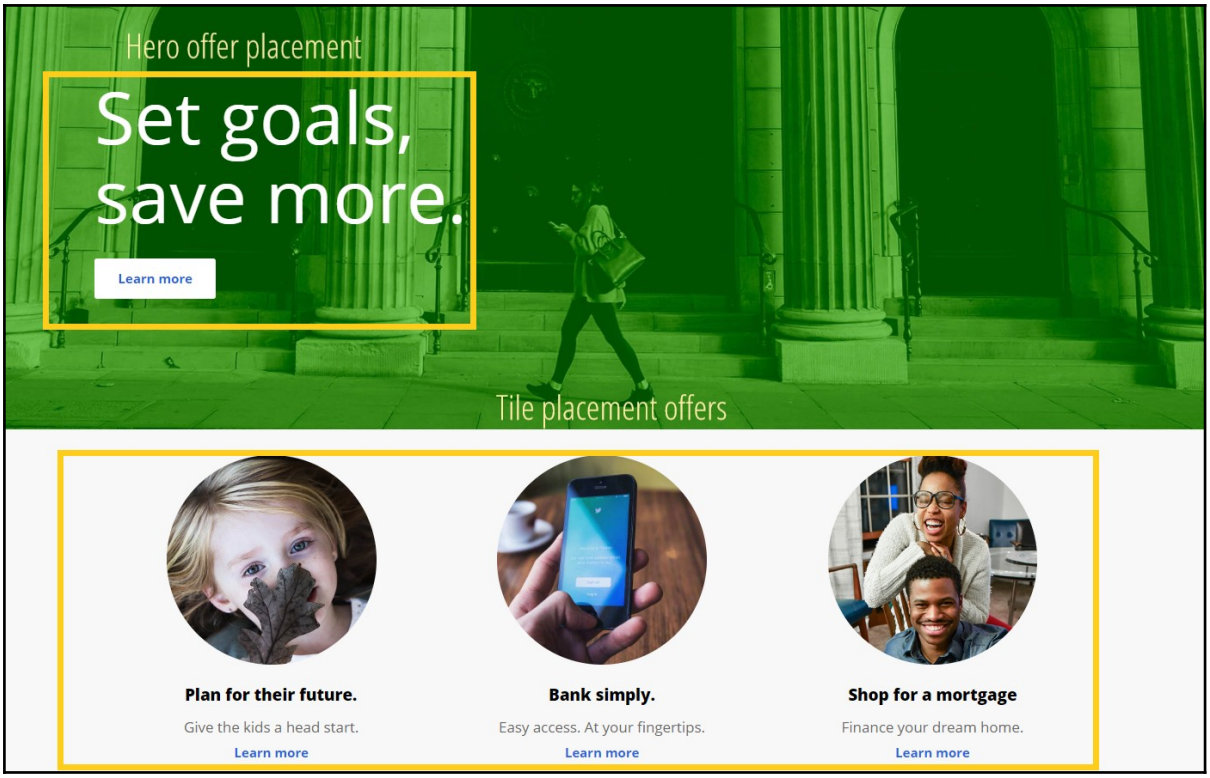
U+ is a retail bank. The bank would like to leverage its website as a marketing channel to improve 1-to-1 customer engagement, drive sales, and deliver Next-Best-Actions in real-time.

The bank has decided to use the Pega Customer Decision Hub™ to recommend more relevant banner ads to its customers when they visit their personal portal.

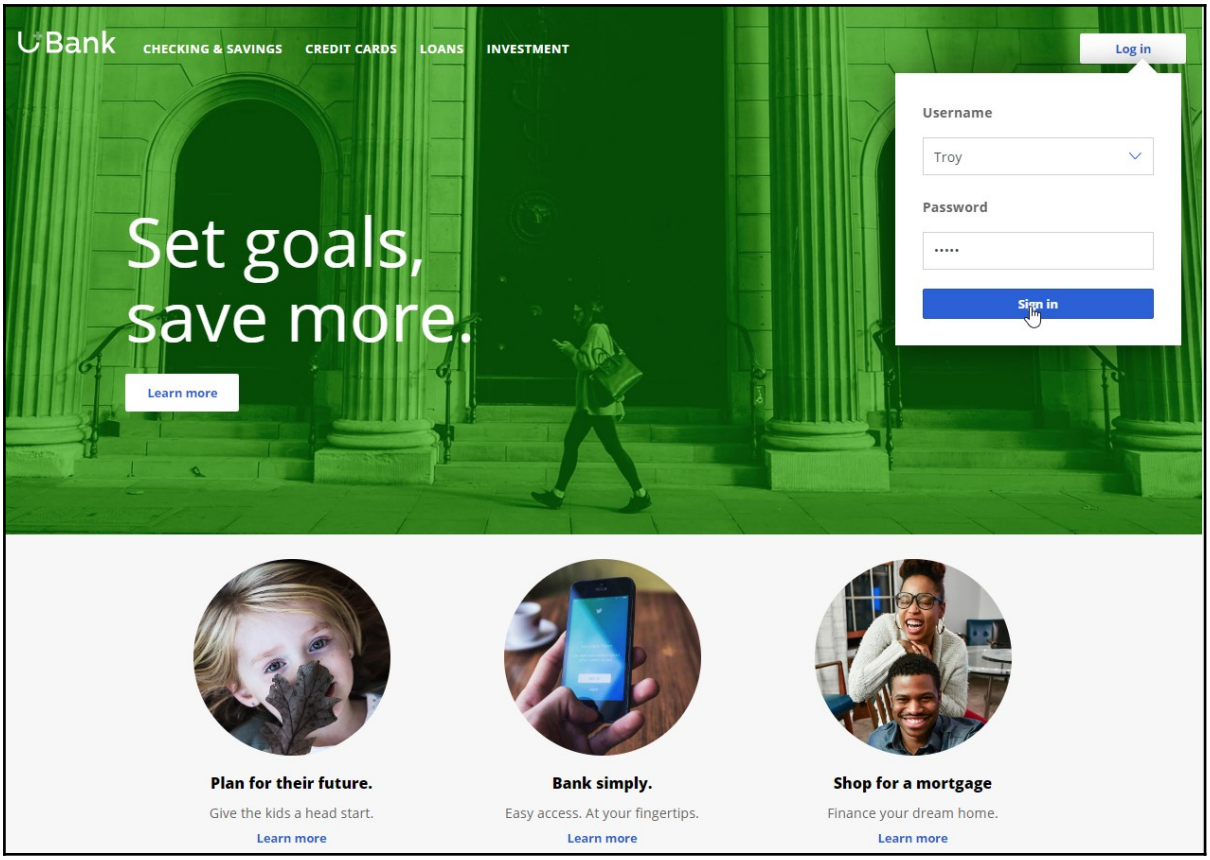
Banner ads are shown on various pages throughout the website.

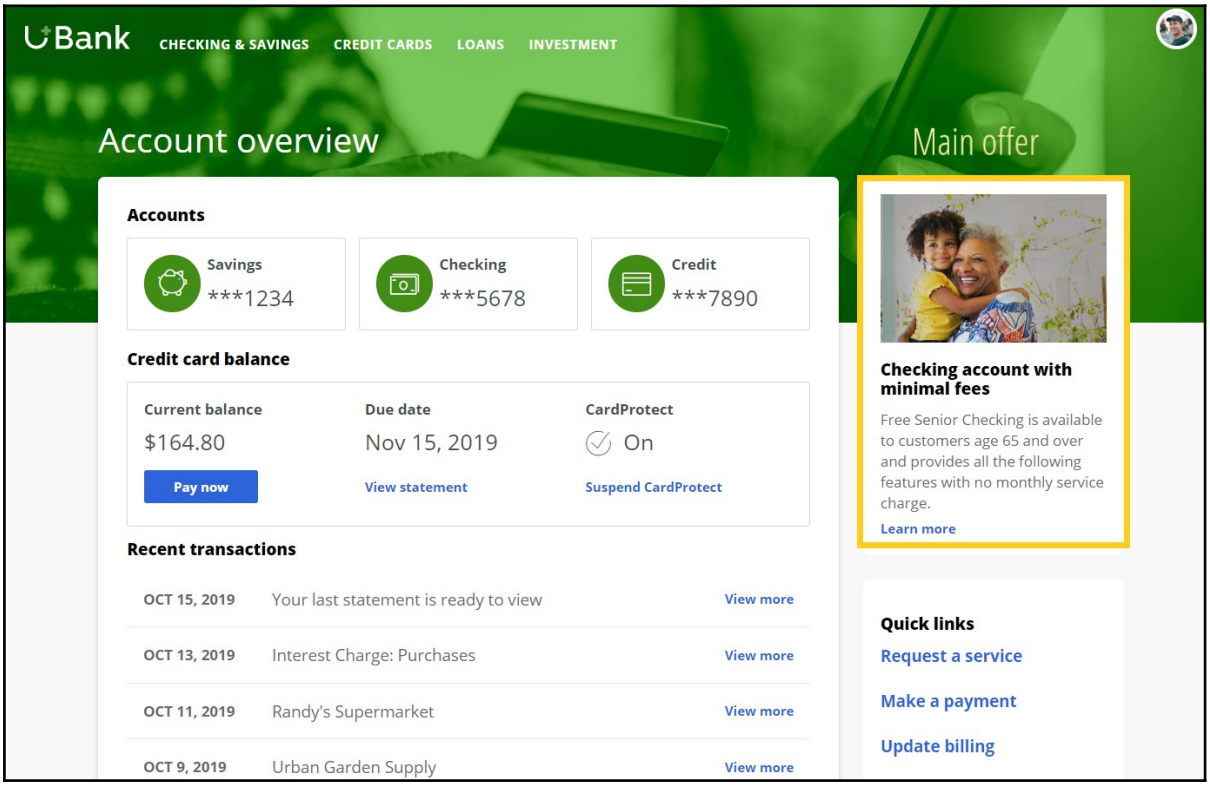
For example, on the home page**,** U+ can display a Hero banner at the top of the page, which is typically a larger image with bigger typeface.

Below that, there is space to display several Tile banners, which are typically smaller.

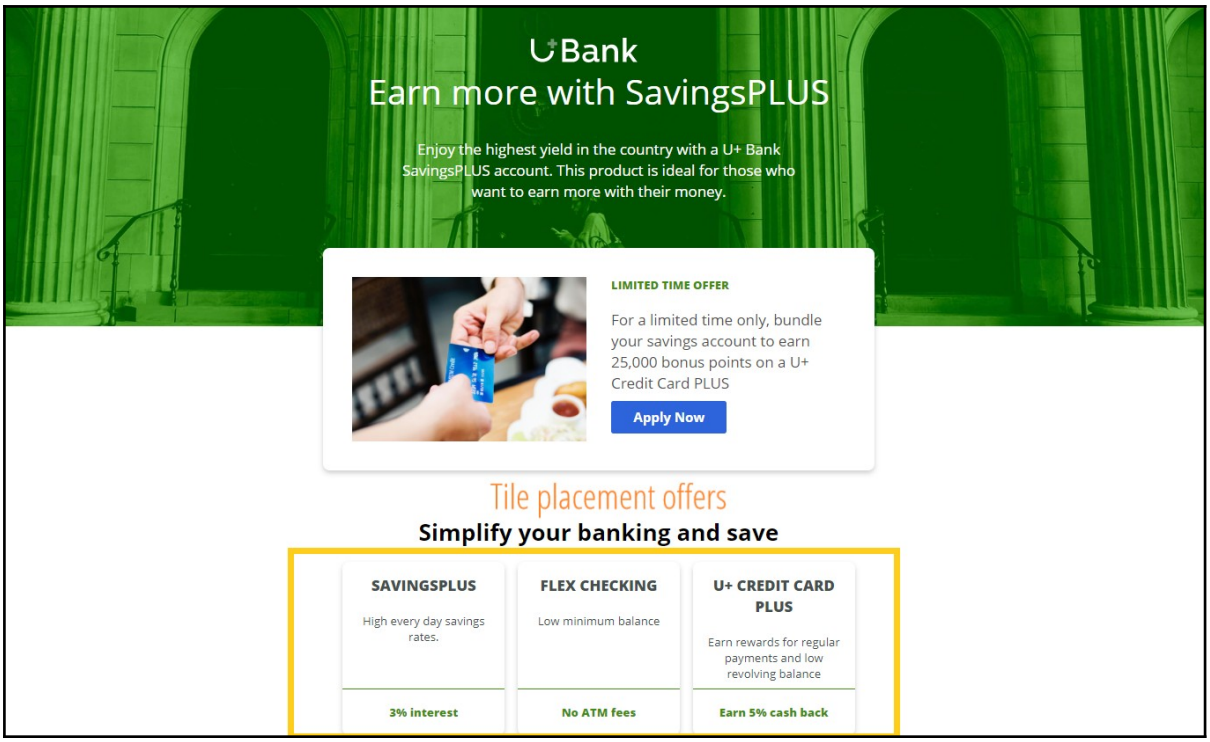


When customers log in to their personal portal, they also see a Tile banner on the ‘Account overview’ page**.**


Bank
CHECKING & SAVINGS
CREDIT CARDS
LOANS
INVESTMENT
Log in
Username
Troy
Password
Sign in
Set goals, save more.
Learn more
Plan for their future.
Give the kids a head start.
Learn more
Bank simply.
Easy access. At your fingertips.
Learn more
Shop for a mortgage
Finance your dream home.
Learn more


Bank
CHECKING & SAVINGS
CREDIT CARDS
LOANS
INVESTMENT
Account overview
Accounts
Savings
***1234
Checking
***5678
Credit
***7890
Credit card balance
Current balance
$164.80
Pay now
Due date
Nov 15, 2019
View statement
CardProtect
On
Suspend CardProtect
Recent transactions
OCT 15, 2019
Your last statement is ready to view
View more
OCT 13, 2019
Interest Charge: Purchases
View more
OCT 11, 2019
Randy's Supermarket
View more
OCT 9, 2019
Urban Garden Supply
View more
Main offer
Checking account with minimal fees
Free Senior Checking is available to customers age 65 and over and provides all the following features with no monthly service charge.
Learn more
Quick links
Request a service
Make a payment
Update billing

The main intent of U+ at this stage is to increase their web engagement. This can be measured by click-through rate. A Click-through is recorded when the customer clicks on the ‘Learn more’ link.



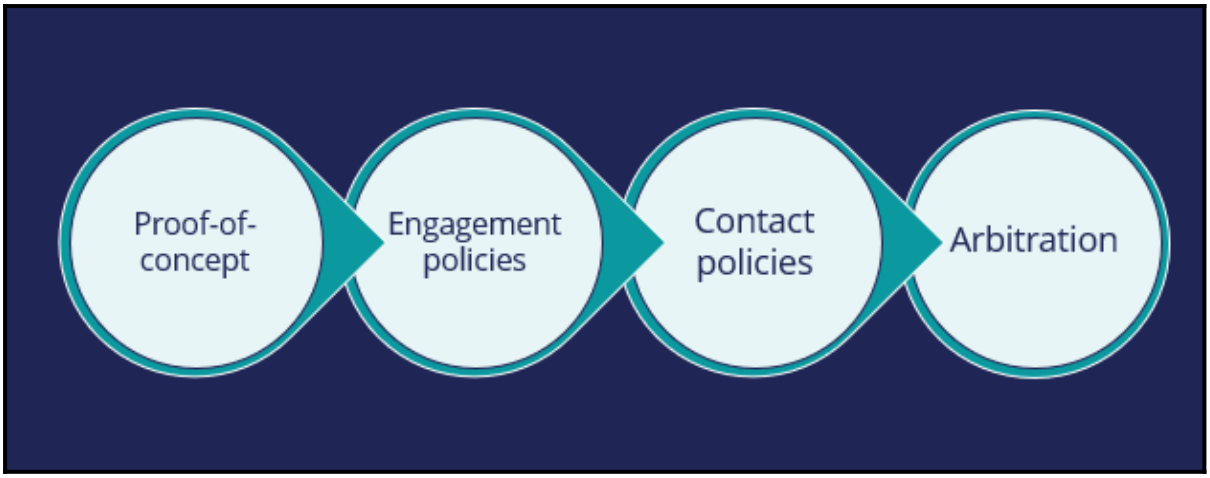
The bank would like to use these banners on the ‘Account overview’ page, to display offers that are more relevant and likely to receive a positive response.

The offers will be selected by a combination of artificial intelligence (AI) and other business rules. The AI and business rules are defined in the Pega Customer Decision Hub.

The Pega Customer Decision Hub is the always-on customer brain that acts as a single, centralized decision authority. The always-on customer brain selects the right offer to be displayed to each customer who visits the bank’s website.

Next-Best-Action Designer lets you configure how you want the always-on brain to select the best offer for a customer. The best offer is the result of a series of decisions that are executed in a hierarchical fashion by the brain.

The bank plans to implement the requirement in multiple phases.



The first phase is a proof-of-concept phase. In this phase, the goal is to display a credit card offer on the U+ website. This requires getting the basic environment up and running, setting up the business structure, defining an Action and a Treatment, and enabling channels and triggers for Next-Best-Action.

As a result of this phase, a credit card offer will be displayed on the 'Account overview' page to all customers who visit the U+ web site. For example, if customer Troy logs in to his account, the 'Cash back' offer is displayed. If another user logs in, they will see the same offer. However, in practice, more offers should be displayed. Also, not all offers may be available to a customer for various reasons.

The next phase is to add customer engagement policies. Engagement policies are the set of conditions such as eligibility, applicability, and suitability that qualify an offer, or a group of offers for a customer. As a result of engagement rules, customers will see only those offers that the organization believes they should be exposed to. For example, Troy logs in, he sees the Rewards Card, but for Barbara this is not applicable, so it will never appear; instead, she sees the Rewards Plus Card.

Too many contact attempts over a short period of time can have a negative impact on a customer's attitude toward further offers by your company. Therefore, in the next phase, U+ implements some contact policies using suppression rules, which allow an offer to be put on hold after a specific number of outcomes. For example, if Troy ignores an ad a few times, then the ad will no longer be shown to him over a period of time. Instead, his 'Account overview' page will show a different ad.

Basically, from a set of all available offers, the choice is narrowed down by engagement policies. Then the selection is further narrowed down by suppression rules.

After the engagement policies and suppression rules have “whittled down” the total possible offers to a few, Arbitration is used to choose the top offer based on what is relevant for the customer right NOW.

Arbitration is the last phase of cross-sell in the U+ web use case.

Arbitration aims at balancing customer relevance with business priorities. Specifically, Propensity, Context Weighting, Action Value, and Business Levers are given numerical values. A simple formula is then used to arrive at a prioritization value, which is used to select the top offer. For example, Troy qualifies for three credit card offers. When he logs in, he sees the top offer for him, the Standard Card. This offer is the Top 1 because the priority value is the highest among all other offers.

This video has concluded. It showed you a typical cross-selling use case on the web channel and its four phases of implementation.

One-to-one customer engagement

Description

Familiarize yourself with the one-to-one customer engagement paradigm. Learn about the business problems Pega Customer Decision Hub™ can solve and discover how Pega's omni-channel AI delivers the right action during every customer interaction.

Learning objectives

- Explain the basics of the Next-Best-Action approach
- Describe the purpose of Next-Best-Action Designer and its user interface

Next-Best-Action paradigm

Introduction

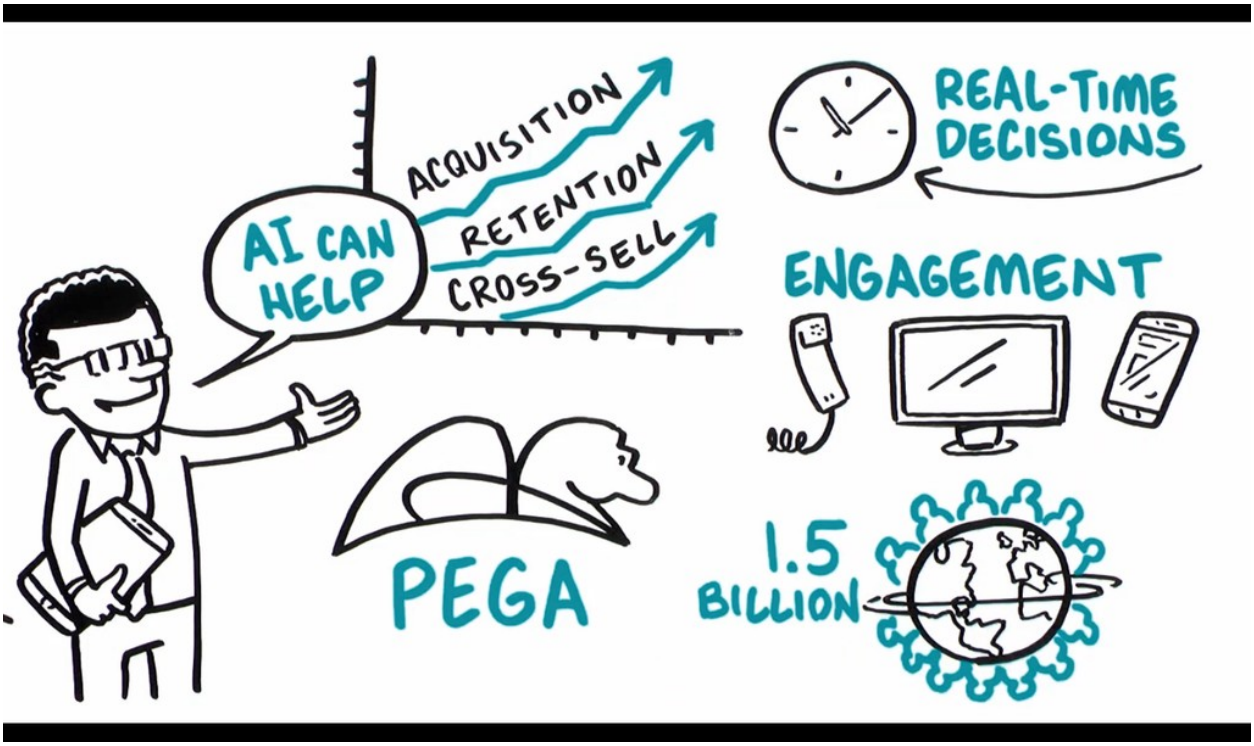
The value of big data and analytics is fully realized when every customer conversation delivers exactly the right message, the right offer, or the right level of service to provide a great experience while maximizing the customer's value to the organization. With Pega Next-Best-Action, business experts develop decision strategies that combine predictive and adaptive analytics with traditional business rules to maximize this value.

Transcript

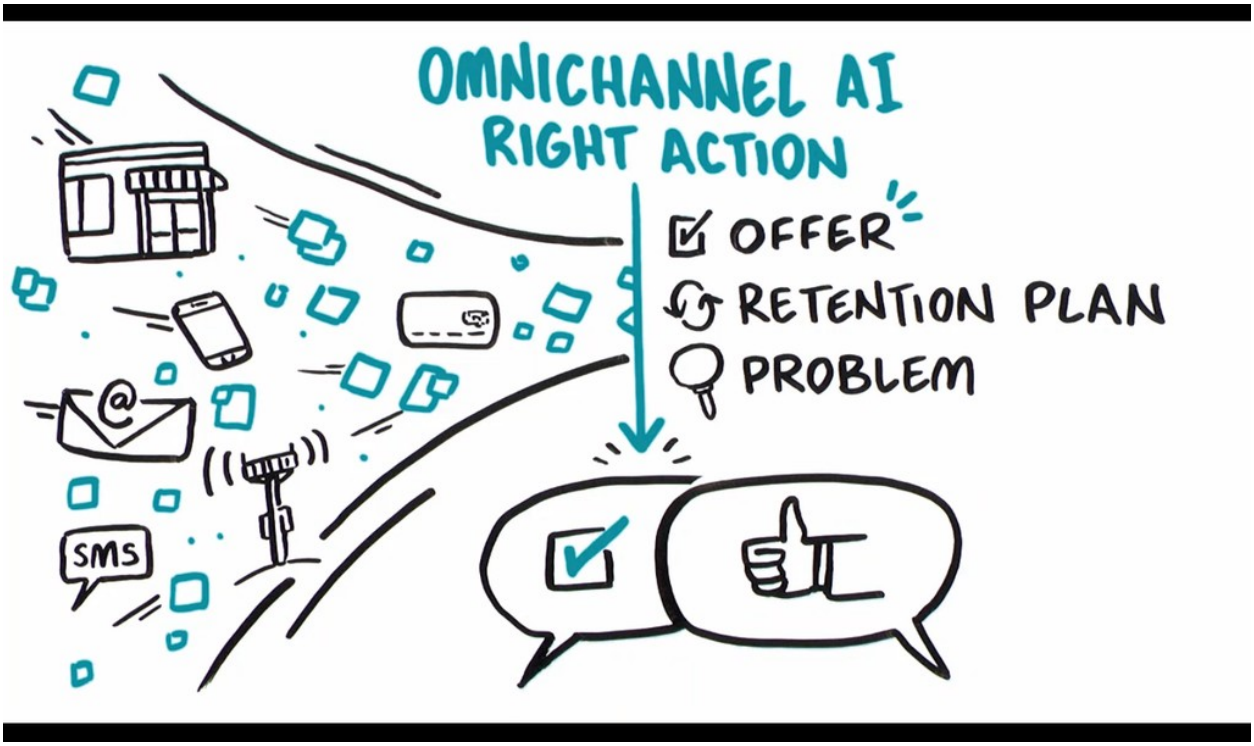
This is your customer. You want him to buy your products, use your services and have a great experience. And your competitors want the same thing. To compete, you have to take the right action at every customer touch, ensuring that each conversation delivers exactly the right message, offer and level of service. You want to provide a great experience, while maximizing the customer's value to your organization.

Artificial Intelligence, or AI, can help—if you can get past the hype. Pega has been using AI to create real business value for years, driving real-time decisions that deliver awesome

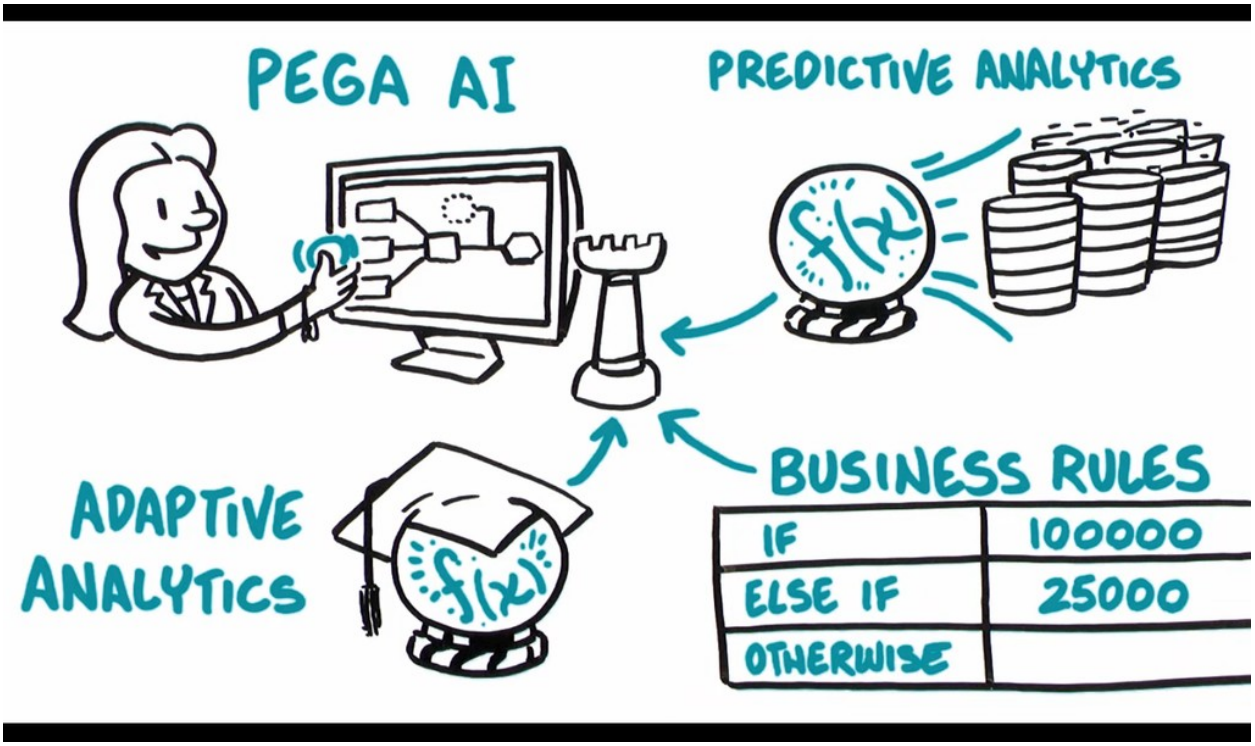
engagement on any channel and improving experiences for over 1.5 billion customers across the globe.



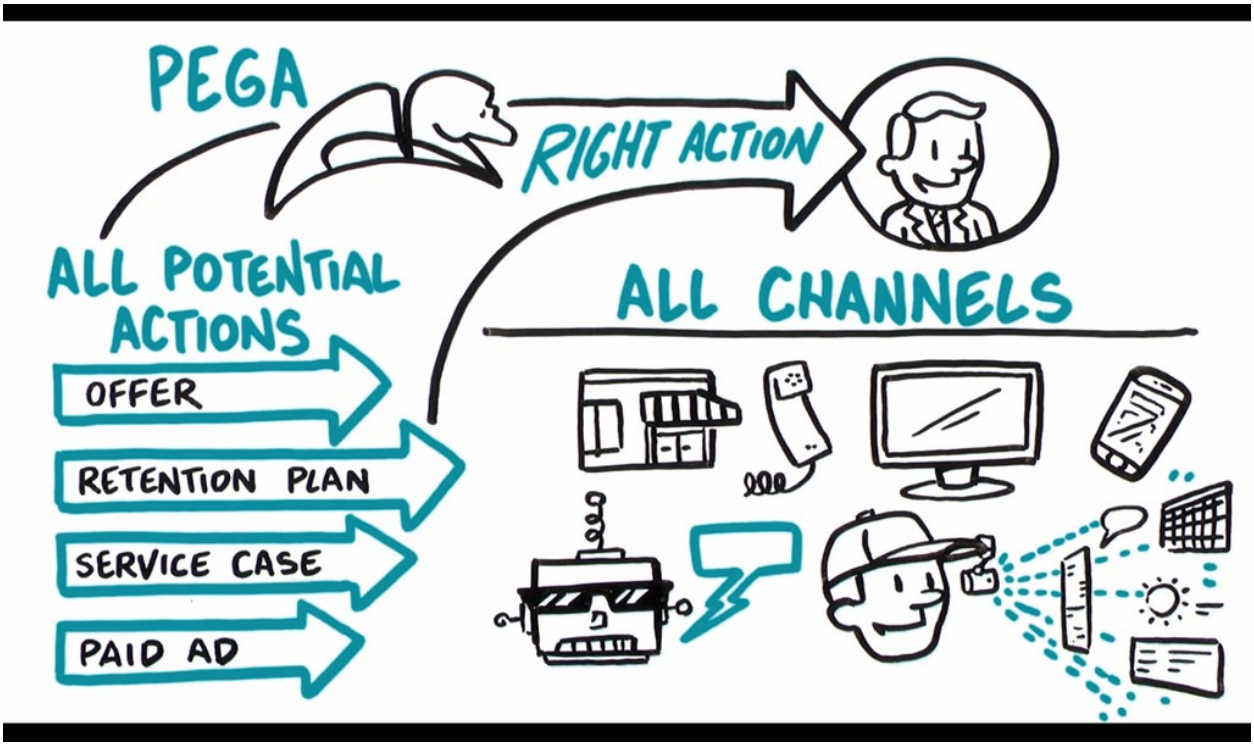
Pega's omni-channel AI delivers the right action at every customer touch by crunching millions of data points in real-time. Make an offer, initiate a retention plan, predict a problem before it happens. Every decision generates the next-best-action for your customer, and your business.



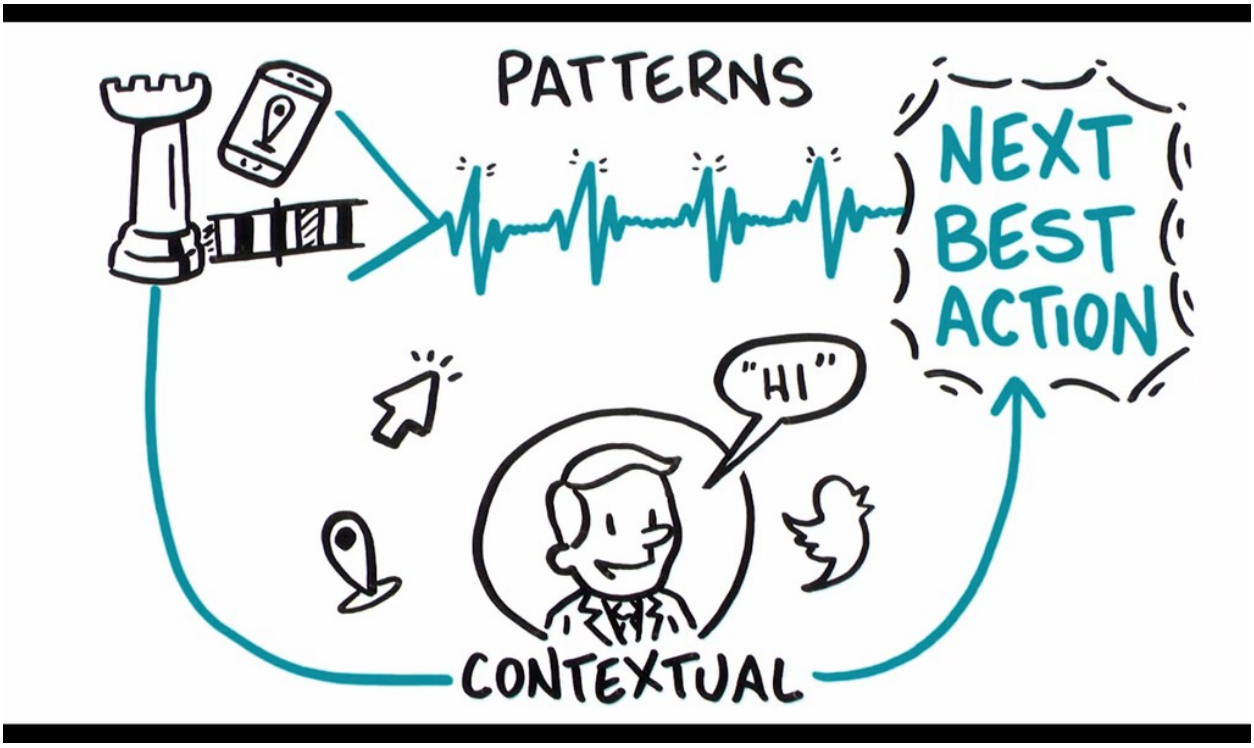
Pega's AI is built for business people, not scientists or developers. They design visual decision strategies that combine predictive analytics, algorithms developed through mining large sets of data, adaptive analytics, machine-learning algorithms that improve with each interaction, and traditional business rules that allow users to prioritize and arbitrate between decisions.



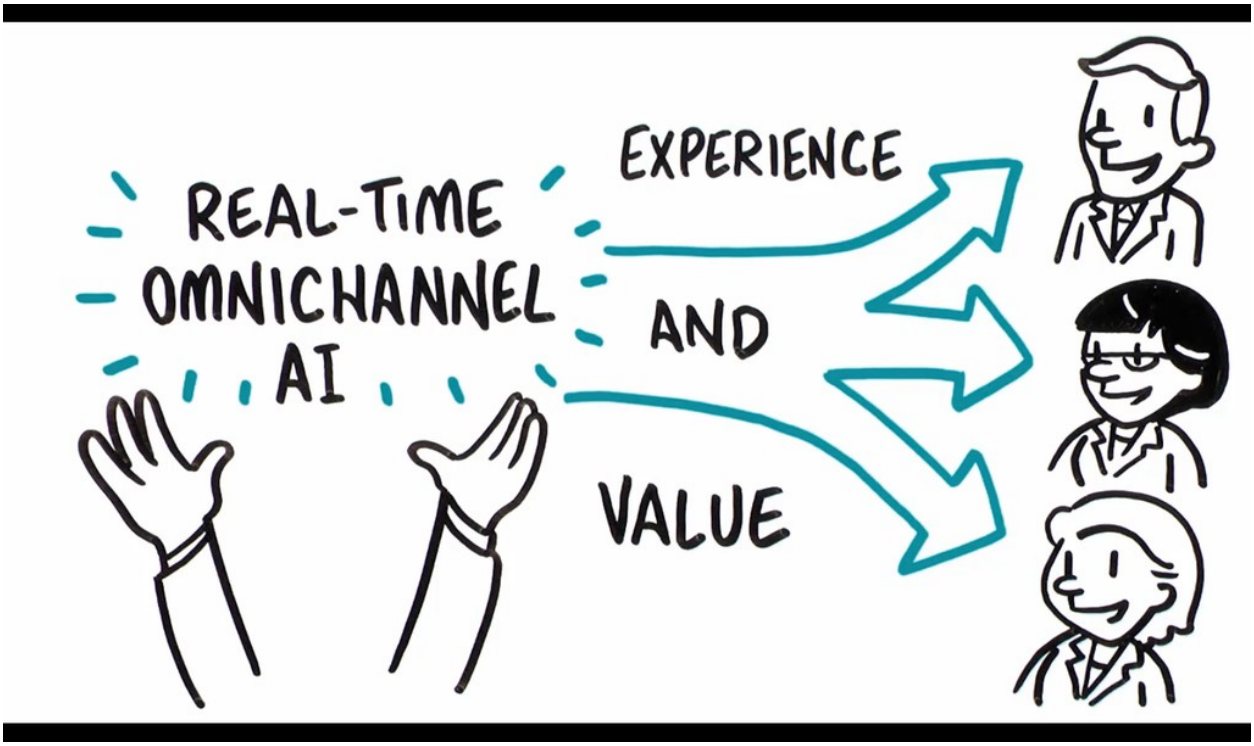
Pega uses the strategy to look across all the potential actions you may take with a customer, make an offer, initiate a retention plan, open a service case, place an ad, and ensure exactly the right action is taken at every interaction and it works across all channels to provide a consistent experience in a store, on the phone, on the web, mobile, with the chat bot, or just some crazy tech that hasn't even been invented yet.



And Pega connects to streams like mobile locations or network events to detect patterns and drive the Next Best Action proactively. And strategies are completely contextual. Any change in the customer's context — a click, a reply, a location change, a Tweet — will trigger the Next Best Action. So, you can really listen to your customers and act accordingly.



Pega's real-time, omni-channel AI puts the power in your hands, so you can optimize every customer interaction for experience, and value.



One-to-one customer engagement paradigm

Introduction

The optimal outcome of every customer interaction is to provide a great experience while maximizing the customer's value to the company. To achieve this, you have to be able to perform the right action in the right channel at the right moment for each customer. We call this capability, "1-to-1 Customer Engagement".

Transcript

In this video, learn about the 1-to-1 Customer Engagement paradigm and how the principles of Next-Best-Action are implemented using the Pega Customer Decision Hub™.

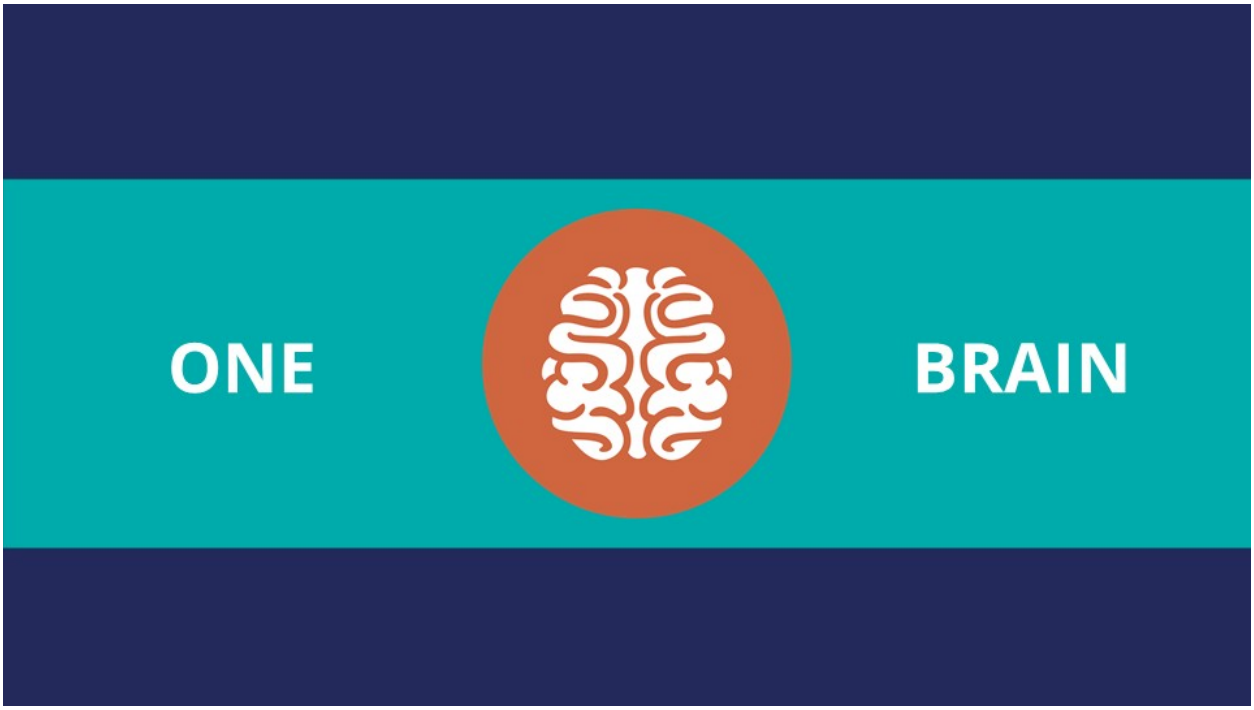
Customers are more empowered than ever before. As a result, they have very high expectations of the experiences they receive from their service providers. Their experiences must make sense within the context of their lives. This means they must be meaningful, consistent, and personalized across every channel they interact with.

In business, the optimal outcome of every customer interaction is to provide a great experience while maximizing the customer's value to the company. To achieve this, you have to be able to perform the right action in the right channel at the right moment for each customer.

We call this capability, "1-to-1 Customer Engagement".

1-to-1 Customer Engagement enables companies to transition their marketing away from a traditional one-to-many campaign-driven approach. A one-to-one approach allows companies to have consistent, contextual and relevant conversations with individual customers across any channel or touch point.

The key to achieving 1-to-1 Customer Engagement is an idea that's simple to conceive, but very difficult to execute: one centralized brain.

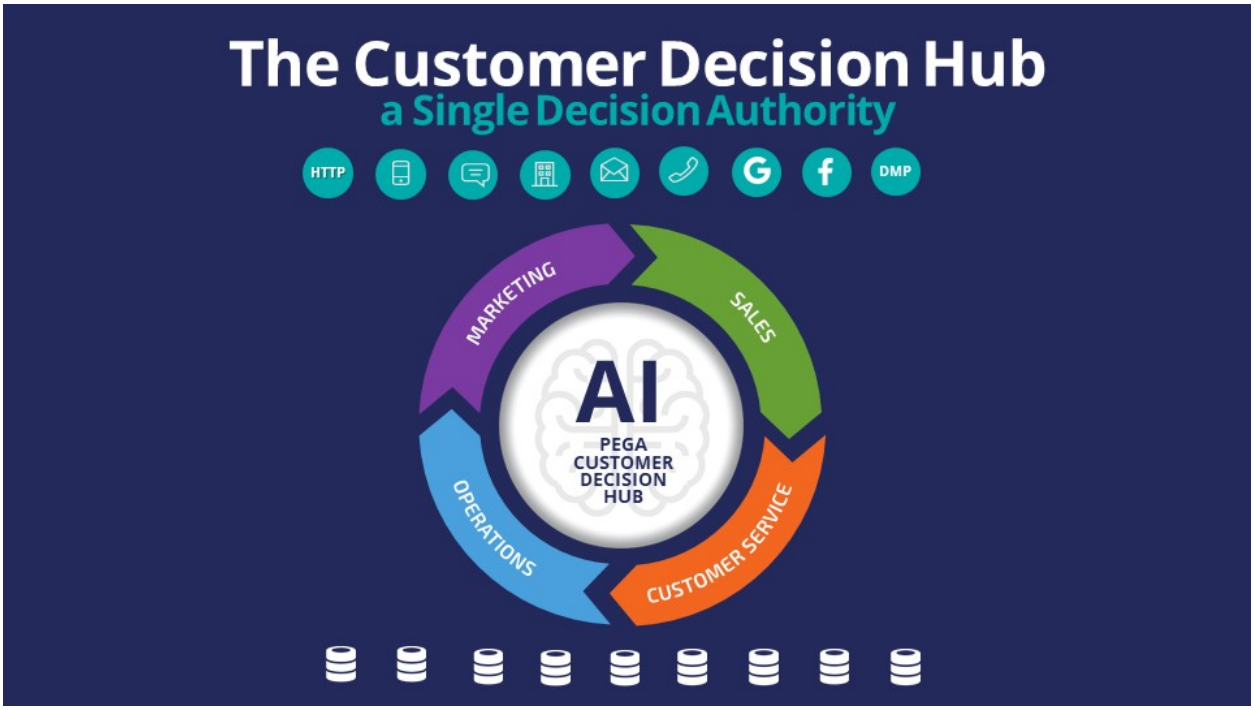


In other words, one piece of intelligence that acts as a single decision authority across your application ecosystem.

Each channel or system profits from this single source of customer intelligence and can leverage it to gain insights or perform relevant actions.

In Pega Marketing™, this centralized brain is called the Pega Customer Decision Hub, and it leverages AI to enable 1-to-1 Customer Engagement.

In Pega Infinity™, the Pega Customer Decision Hub forms the core of the customer engagement platform, which sits at the center of existing systems and channels in an enterprise.



Data from every customer engagement across the enterprise is collected by the Brain and used to make predictions and decisions about every interaction in every channel.

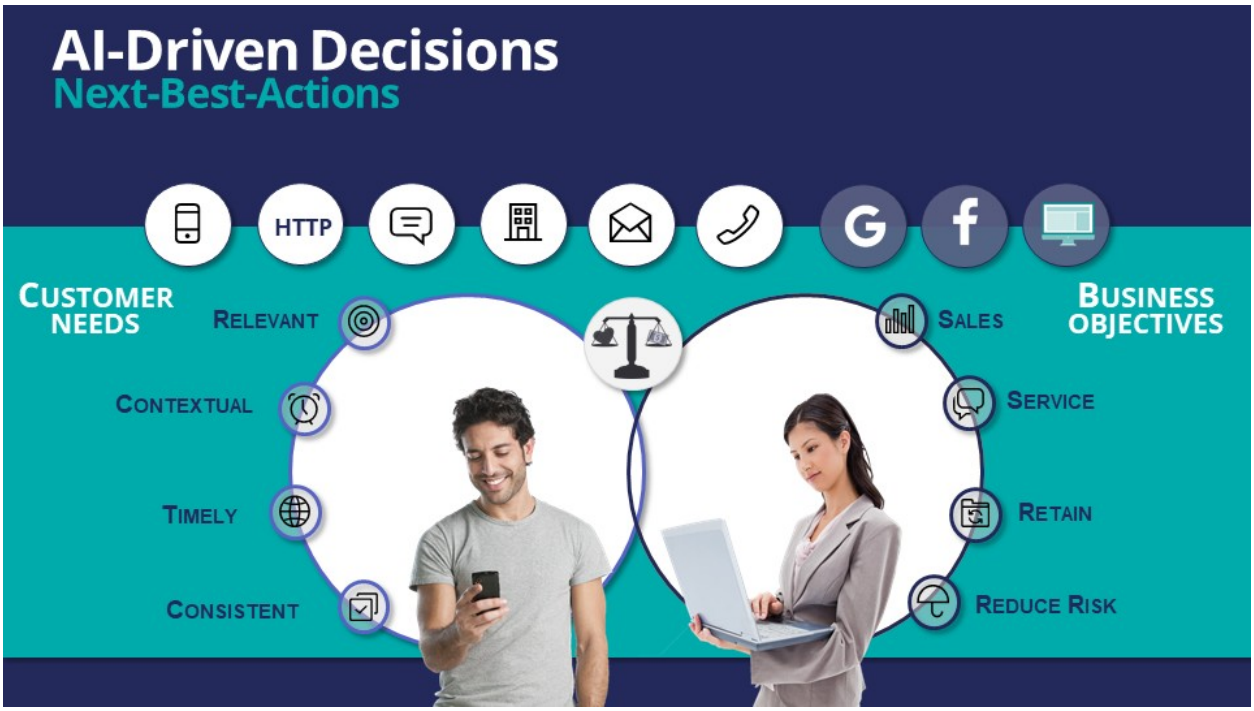
Continuous learning and decision-making are the foundation of a 1-to-1 Customer Engagement solution.

The Customer Decision Hub combines analytics, business rules, customer data, and data collected during each customer interaction to create a set of actionable insights that it uses to make intelligent decisions. These decisions are known as the Next-Best-Action.

Every Next-Best-Action weighs customer needs against business objectives to optimize decisions based on priorities set by the business manager.

In the milliseconds before interacting with a customer, the Customer Decision Hub processes thousands of predictive and adaptive models to determine customer needs, considering the customer's immediate context to ensure the Next-Best-Action is relevant, timely, and contextual. These models can be propensity, risk, or churn models.

Next, the decision strategy considers business rules and matches those with the customer's context and higher-level business goals.



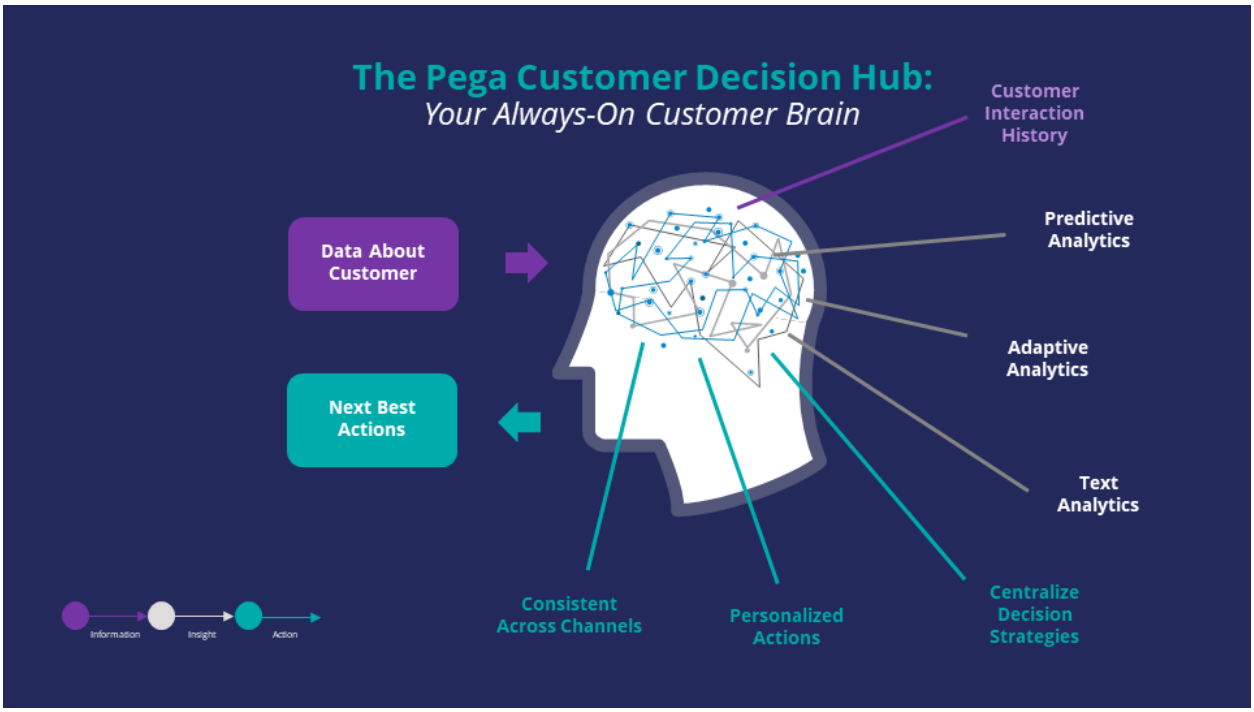
All of this information is used by the Next-Best-Action decision strategy to evaluate every potential action that could be taken with a particular customer in a given situation. The decision strategy then recommends the best way to interact with the customer to achieve the optimal result.

Using the Next-Best-Action approach, the Customer Decision Hub is able to identify the best moments for making a sale, providing a service, making a retention offer, or doing nothing at all (e.g. if nothing is relevant enough to warrant the customer's attention). Next-Best-Action is even able to select which offers are most likely to be accepted by the customer in a sales or retention situation. Next-Best-Action decisions are distributed, in real-time, to each of your real-time owned channels, such as web, mobile, and contact center. Through Pega Marketing, Next-Best-Actions can also be distributed to real-time paid channels such as Google, YouTube, Facebook, LinkedIn and Instagram. Pega Marketing also integrates with non-real time outbound channels such as data management platforms (DMPs) and email.

Once the Next-Best-Actions are distributed and customer responses have been received by the Brain, the whole process begins again, and new Next-Best-

Actions are distributed within milliseconds. Every outbound channel, including a data management platform, is dynamically updated with the Next-Best-Action to ensure consistency and an optimized customer experience no matter which channel the customer interacts with.

In summary, the Pega Customer Decision Hub is the Always-On Brain that acts as a single, centralized decision authority.



It uses data about the customer, including past interactions, as input.

It leverages advanced AI techniques to make predictions.

And it uses decision strategies (which combine traditional business rules with predictive, adaptive and text analytics), to deliver consistent and personalized Next-Best-Actions across all channels.

Next-Best-Action Designer

Introduction

Next-Best-Action Designer guides you through the creation of a Next-Best-Action strategy for your business. Its intuitive interface, proven best practices and sophisticated underlying decisioning technology enable you to automatically deliver personalized customer experiences across inbound, outbound and paid channels. Next-Best-Action Designer is organized according to the high-level sequence of steps needed to configure the Next-Best-Action strategy for your organization.

Transcript

Next-Best-Action Designer guides you through the creation of a Next-Best-Action strategy for your business. Its intuitive interface, proven best practices and sophisticated underlying decisioning technology enable you to automatically deliver personalized customer experiences across inbound, outbound and paid channels.

The Next-Best-Action Designer user interface allows you to easily define, manage and monitor Next-Best-Actions.

The tabs across the top of the user interface represent the steps that need to be completed to define Next-Best-Actions.

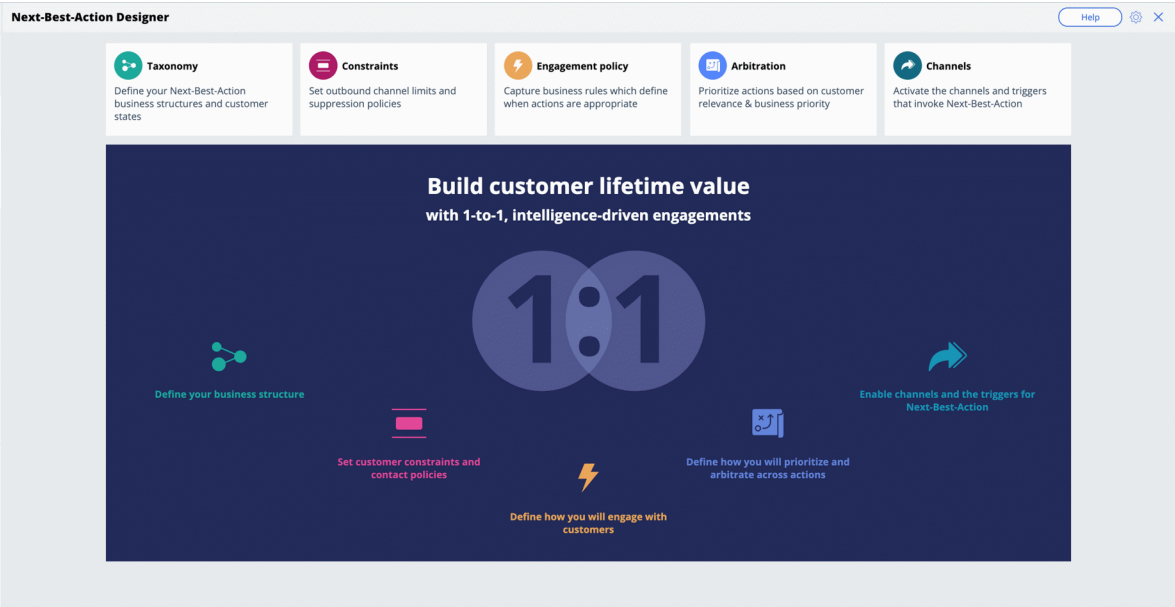
Use the **Taxonomy** component to define the business structure for your organization.

Use the **Constraints** component to implement channel limits and constraints.

Use the **Engagement policy** component to define the rules that control which actions are offered to which customers.

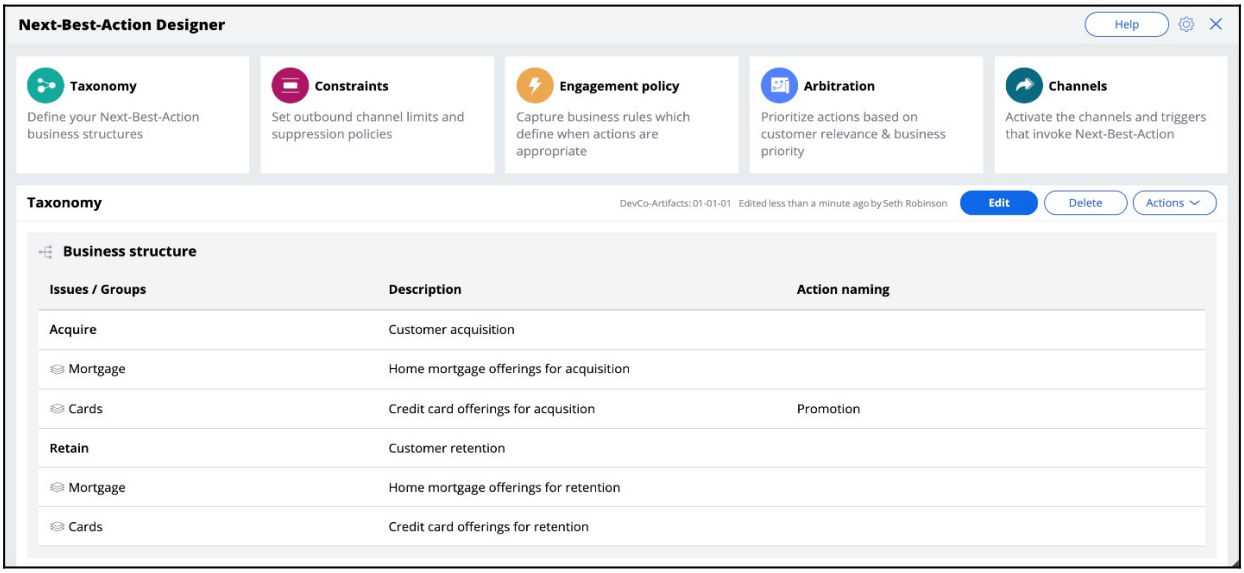
Use the **Arbitration** component to configure how actions are prioritized.

Use the **Channels** component to configure when and where Next-Best-Action is triggered.



The system uses these definitions to create an underlying Next-Best-Action Strategy framework. This framework leverages best practices to generate Next-Best-Action decision strategies at the enterprise level. These decision strategies are a combination of the business rules and AI models that form the core of the Pega Centralized Decision Hub, which determines the personalized set of Next-Best-Actions for each customer.

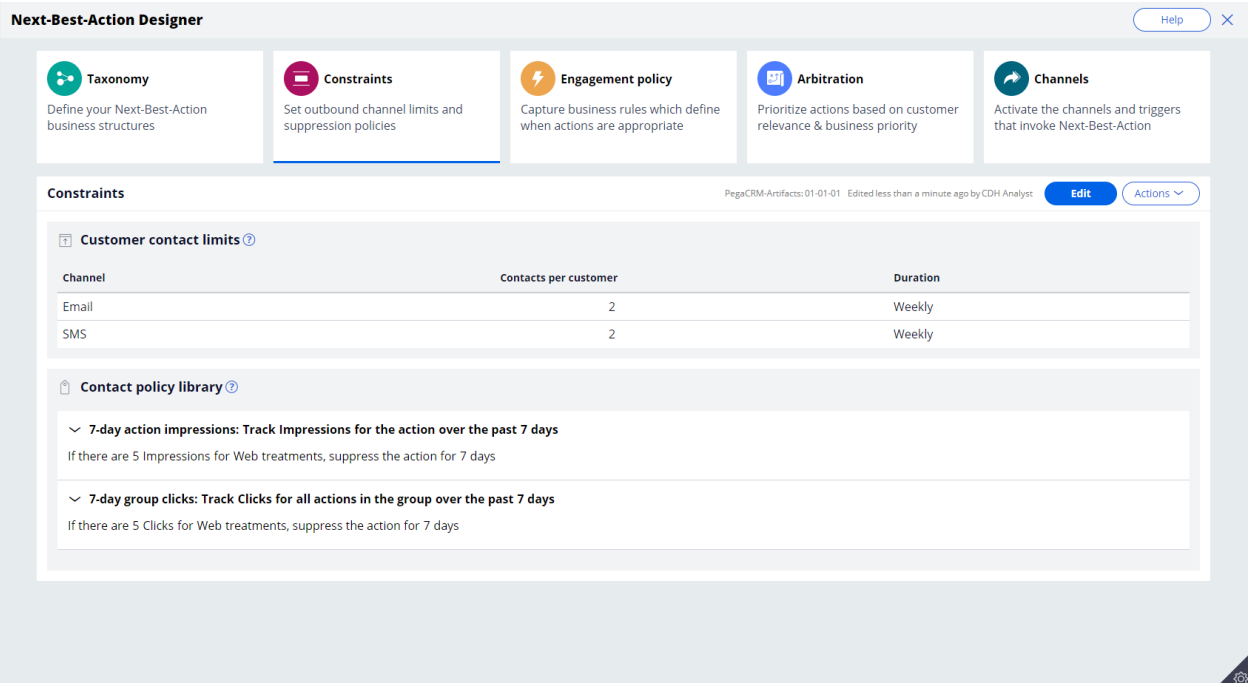
Use the **Taxonomy** component to define the hierarchy of Business Issues and Groups to which an action belongs.



A Business Issue is the purpose behind the actions you offer to customers. For example, actions with the purpose of retaining existing customers should be grouped under the business Issue of Retention. Actions with the purpose of acquiring new customers belong to the business Issue of Acquisition.

Business Groups are used to organize customer actions into categories. For example, as part of the business Issue of Acquisition, you can create Groups for products like Credit Cards, Mortgages, or Personal Loans, with the intention of offering these to potential customers.

Use **Constraints** to specify outbound contact limits as well as to limit overexposure to a specific action or group of actions.

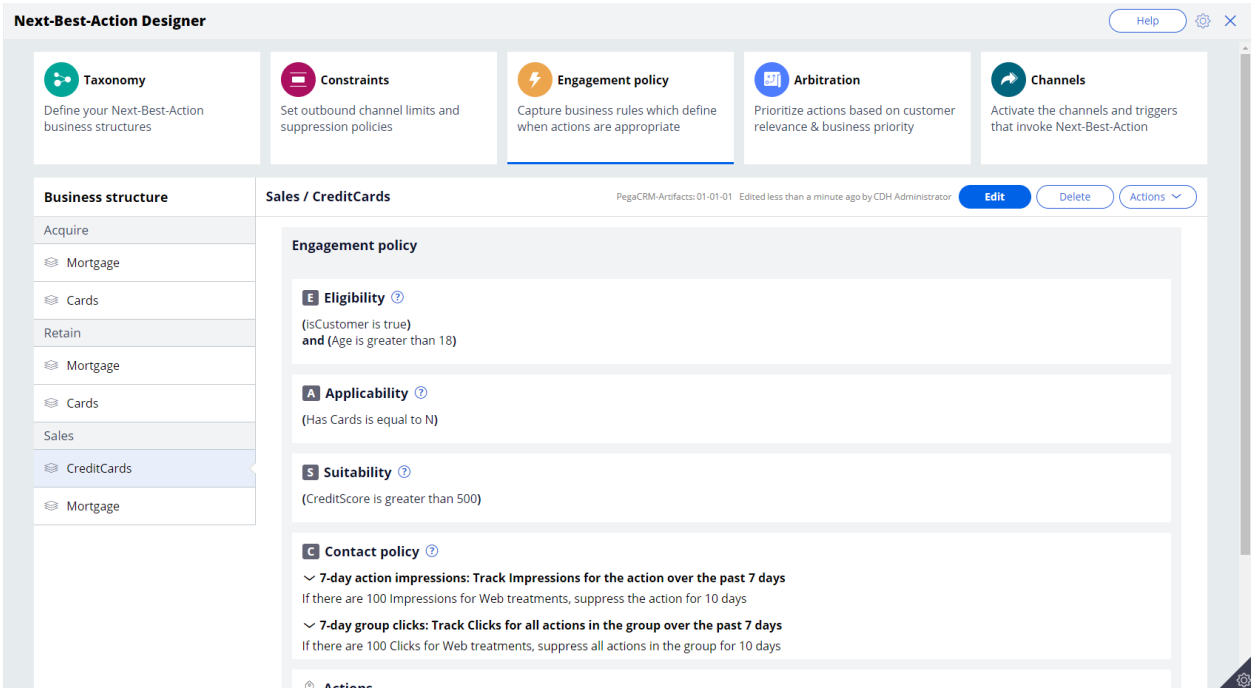


Customer contact limits allow you to limit the number of interactions that a customer can receive over a given period of time on a specific channel. For example, you can decide that you do not want your customers to receive more than two emails per week or two SMS messages per week.

On the Constraints tab of Next-Best-Action Designer, you can define more extensive suppression rules by creating Contact Policy rules in the library. Contact Policy rules are reusable across all Business Issues and Groups.

In the Contact Policy library, you define suppression rules that automatically put an action on hold after a specific number of outcomes are recorded for some or all channels. For example, an action can be suppressed for a customer for seven days after the customer has seen an ad for that action five times. Suppressing or pausing an action prevents over-exposure by limiting the number of times a customer is exposed to the same action.

Use **Engagement policies** to define when specific actions or groups of actions are appropriate for customers.



There are four types of engagement policies:

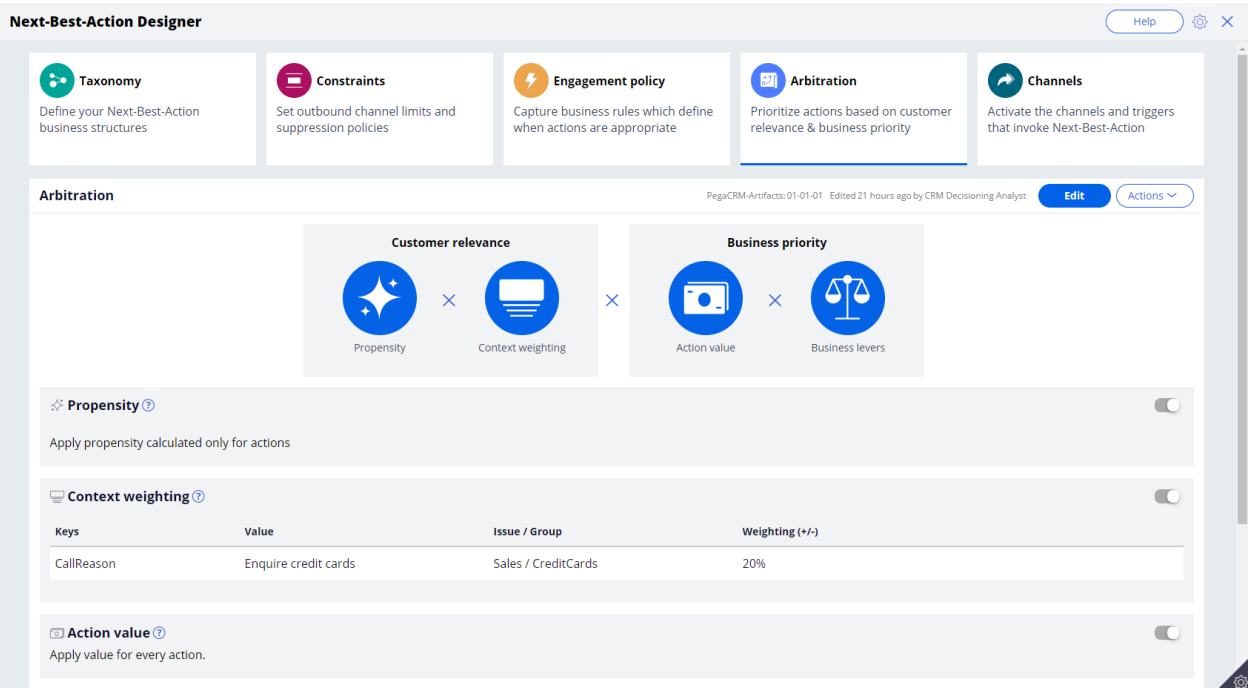
Eligibility determines whether or not a customer qualifies for an action or group of actions. For example, an action may only be available for customers over a specific age or living in a specific geographic location.

Applicability determines if an action or group of actions is relevant for a customer at a particular point in time. For example, a discount on a specific credit card may not be relevant for a customer who already owns a card.

Suitability determines if an action or group of actions is appropriate for a customer for ethical or empathetic reasons. For example, a new loan offer may not be appropriate for a customer whose credit score is low, even though it might be profitable for the bank.

Contact Policies determine when an action or group of actions should be suppressed and for how long. For example, you can suppress an action after a specific number of promotional messages has been sent to customers. To activate Contact Policy rules created in the library on the Constraints tab, add them to the Engagement Policy tab.

Arbitration determines how the Customer Decision Hub prioritizes the list of eligible and appropriate actions that come out of each group.



The factors weighed in arbitration are: Propensity, Context weighting, Action value, and Business levers, each represented by numerical values. A simple formula is used to arrive at a prioritization value, which is used to select the top actions.

Propensity is the likelihood of a customer responding positively to an action. This is calculated by Artificial Intelligence (AI). For example, a click on an offer banner or an accept of an offer in the contact center are considered positive behaviors.

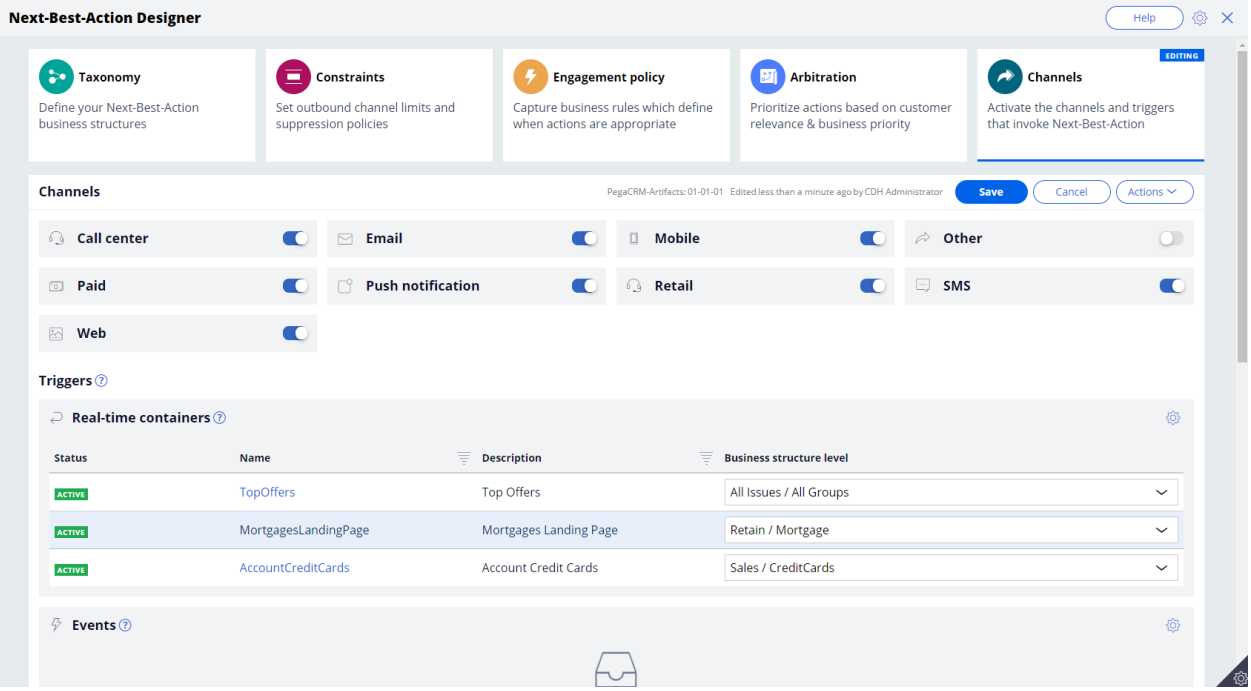
Real-time contextual data is an important part of making highly relevant recommendations**.** **Context weighting** allows you to assign weighting to a specific context value for all actions within an Issue or Group. For example, if a customer contacts the bank to change their address, the weight of the Service context will increase, and the highest priority action will be to ensure that the relevant service is delivered to the customer.

Action value enables you to assign a financial value to an action and prioritize high-value actions over low-value ones. For example, promoting an unlimited data plan might be more

profitable for the company than a limited data plan. Action values are typically normalized across Issues and Groups.

Business levers enable you to accommodate ad hoc business priorities by specifying a weight for an action or Group of actions and/or its associated Business Issue.

Next-Best-Action Designer enables Next-Best-Actions to be delivered via inbound, outbound and paid channels.



These channels can be toggled on or off. If a channel is toggled off, the Next-Best-Actions will not be delivered to that channel.

An external real-time channel is any channel that presents actions selected by the Customer Decision Hub to a customer. These channels can include a website, or a call-center or mobile application. A real-time container is a placeholder for content in an external real-time channel.

A trigger is a mechanism whereby an external channel invokes the execution of a Next-Best-Action decisioning process for specific Issues and Groups. The result will be delivered back to the invoking channel. For example, when a real-time container called “Mortgages Landing Page” is configured, the website invokes this real-time container before loading the mortgage page.

As you have seen in this video, Next-Best-Action Designer is organized according to the high-level sequence of steps needed to configure the Next-Best-Action strategy for your organization. These steps involve:

- Defining the business structure for your organization
- Implementing the channel limits and constraints
- Defining the rules that control which actions are offered to which customers
- Configuring how actions are prioritized
- Configuring when and where Next-Best-Action is triggered

Defining and managing customer actions

Description

In Pega Customer Decision Hub™, learn how to use Next-Best-Action Designer to build the business issue/group hierarchies for your organization. Create an action under a specific business issue/group hierarchy and learn to rename an action to better reflect its business context.

Learning objectives

- Explain an actions hierarchy
- Configure a business structure with issues and groups
- Create actions
- Rename actions

Action hierarchy

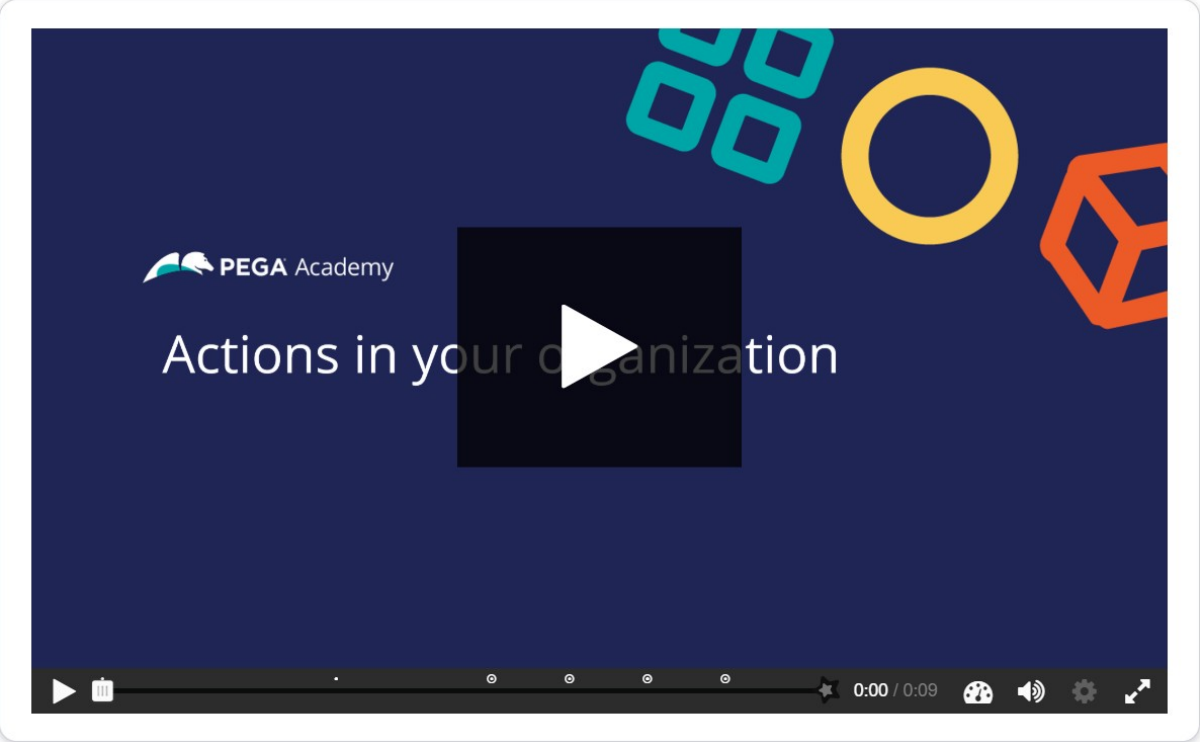
Customer action introduction

In Pega Customer Decision Hub™, next-best-action customer recommendations can take many forms, such as a banner advertisement, a retention offer, or a service message. Learn how to recognize different types of actions in your organization and organize similar actions into action groups.

Actions in your organization

Click the **Play** icon to learn about customer actions and how to organize them.

Full-screen mode is available in the lower right of the interaction.

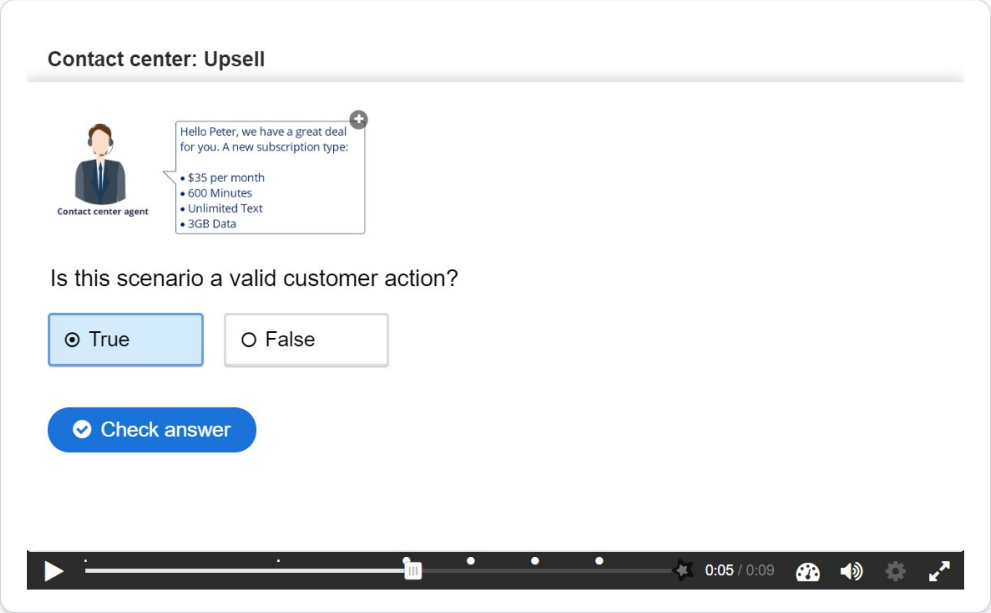


In Pega Customer Decision Hub, customer actions are offerings that list the details of your products. Next best action uses these properties to determine the priority of each offering for each customer and provide you with the next best action to take.

To learn more about the different type of customer actions, consider the following scenarios in various channels: contact center, mobile, and web.

Click **Continue** to see how actions are used in various scenarios.

Scenario 1: Contact center: up-sell



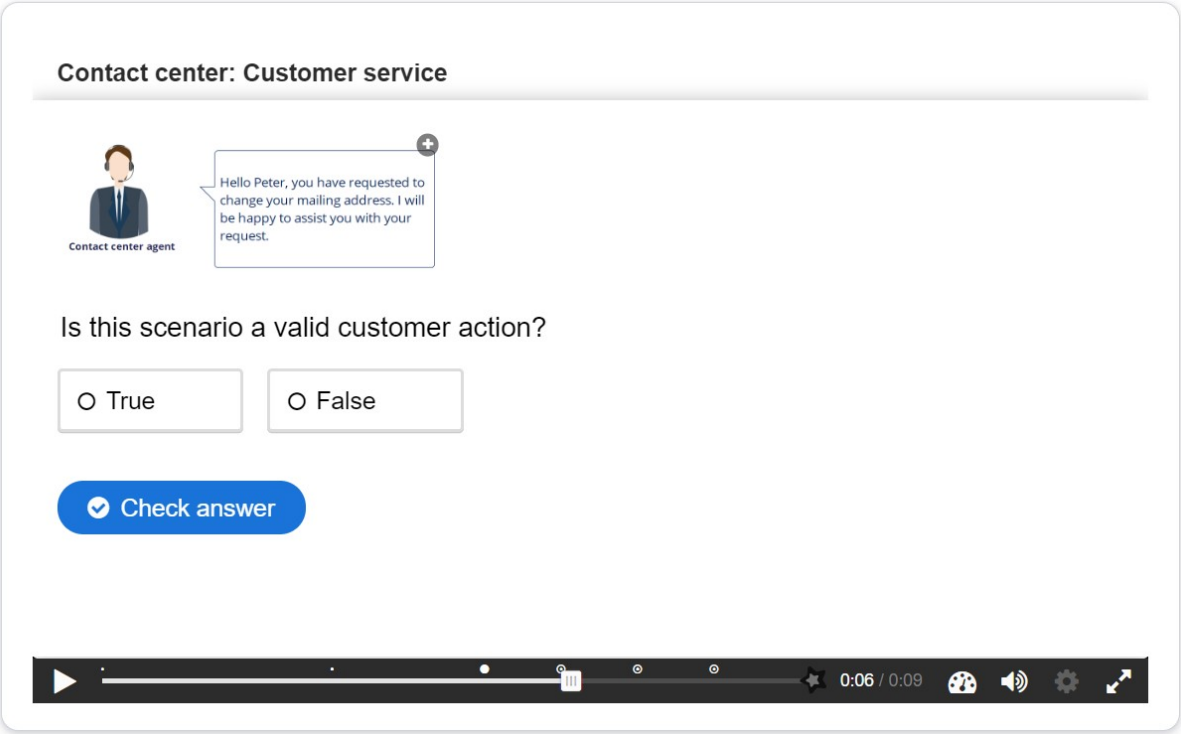
Is this scenario a valid customer action?

- True
- False

Correct feedback: **This scenario is an upsell offer made in a contact center and is a valid customer action.**

Incorrect feedback: **An upsell offer made in a contact center is a valid customer action.**

Scenario 2: Contact center: customer service



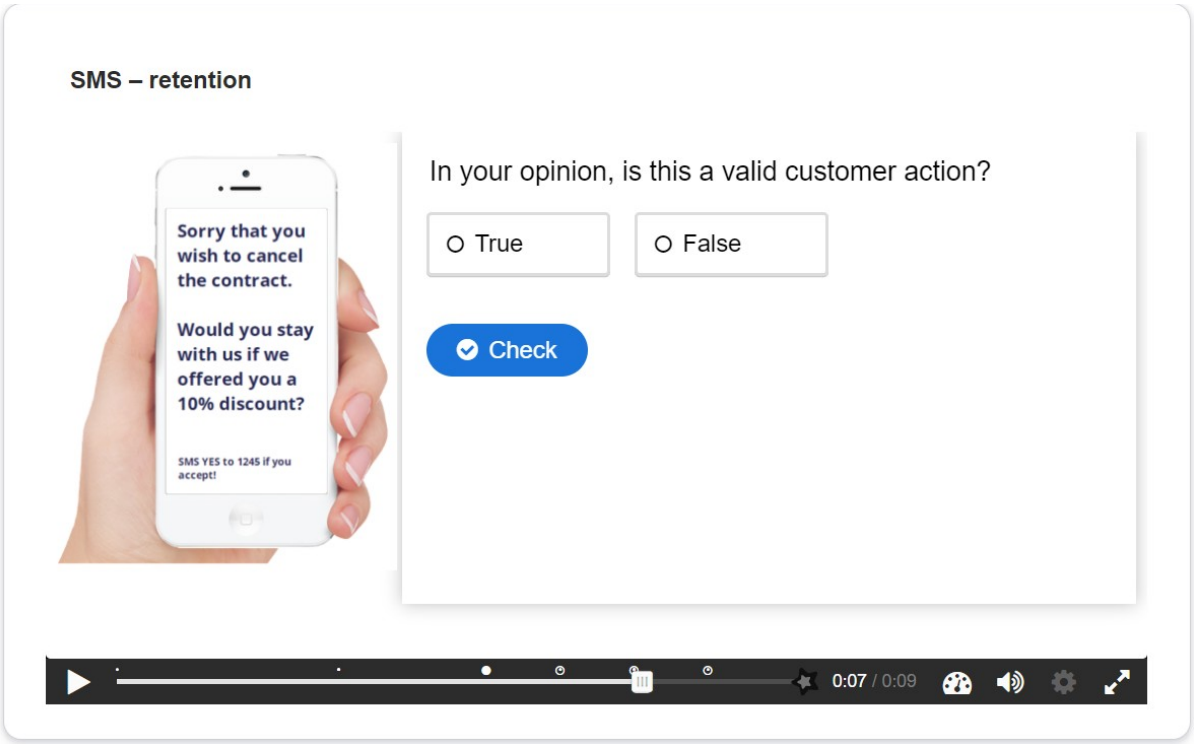
Is this scenario a valid customer action?

- True
- False

Correct feedback: **This scenario is a service message recommended by the Pega Customer Decision Hub and is a valid customer action.**

Incorrect feedback: **A service message recommended by the Pega Customer Decision Hub is a valid customer action.**

Scenario 3: SMS – retention



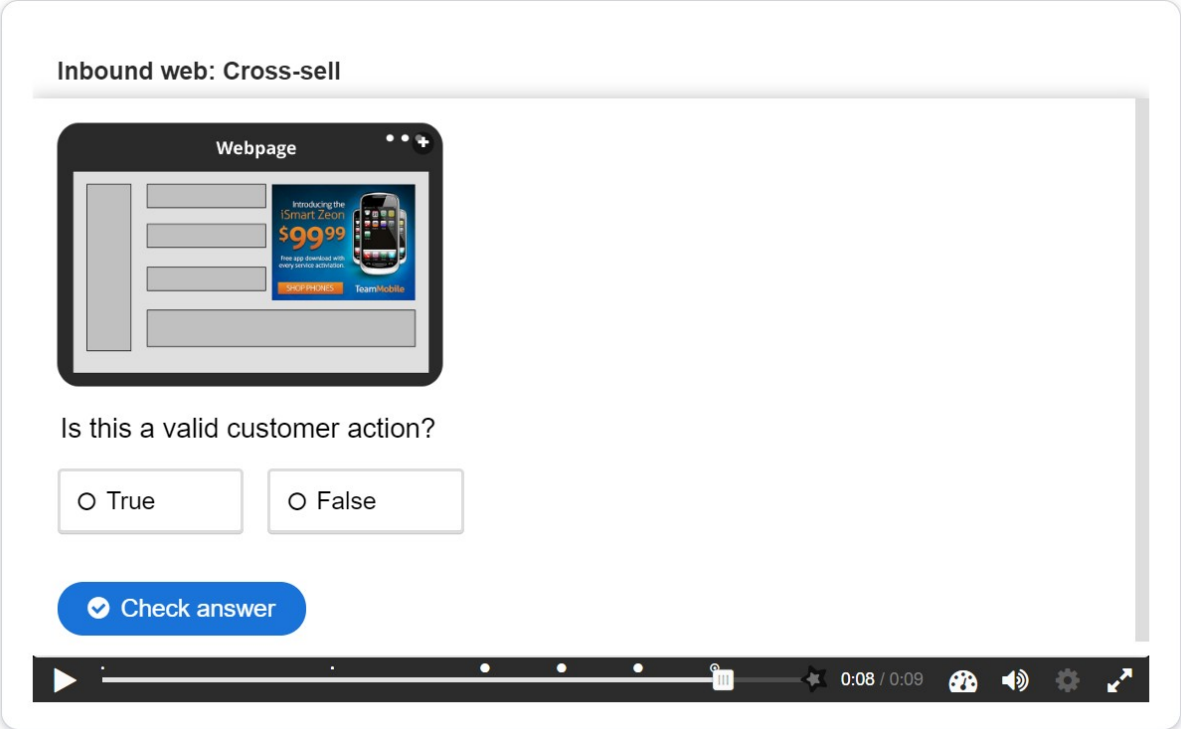
In your opinion, is this a valid customer action?

- True
- False

Correct feedback: **This scenario is a retention offer made on the mobile channel to retain a customer and is a valid customer action.**

Incorrect feedback: **A retention offer made on the mobile channel to retain a customer is a valid customer action.**

Scenario 4: Inbound-web: cross-sell



Is this a valid customer action?

- True
- False

Correct feedback: **This scenario is a banner advertisement on a website and is a valid customer action.**

Incorrect feedback: **A banner advertisement on a website is a valid customer action.**

Customer action properties

Every customer action has properties that define its characteristics.

In the following image, click the **+** icons to identify the valid properties of customer actions.

Image is a valid property and represents the image that is used for the banner.

Price is a numeric property that represents the price of the customer action.

Benefit is a valid property that represents the value proposition to the customer.

Short title is a valid property that represents a short description of the customer action.

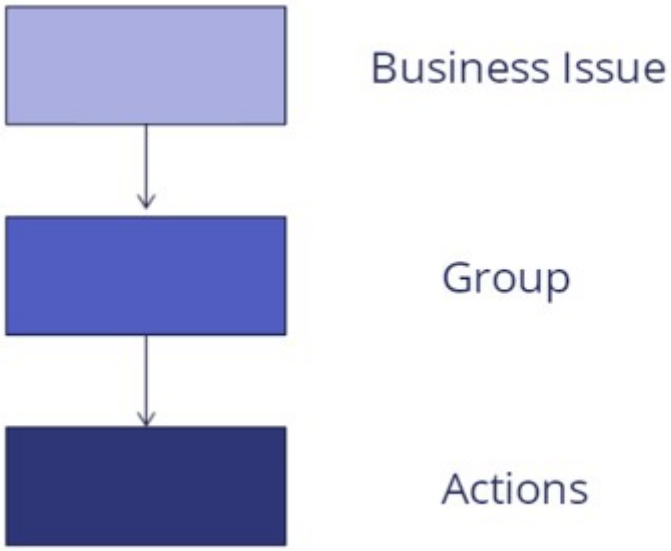
Call to action is not a valid property. This button is a call to action for people who want to purchase the product.

Company name is not necessarily a valid property, as this text represents the company name.

Business hierarchy

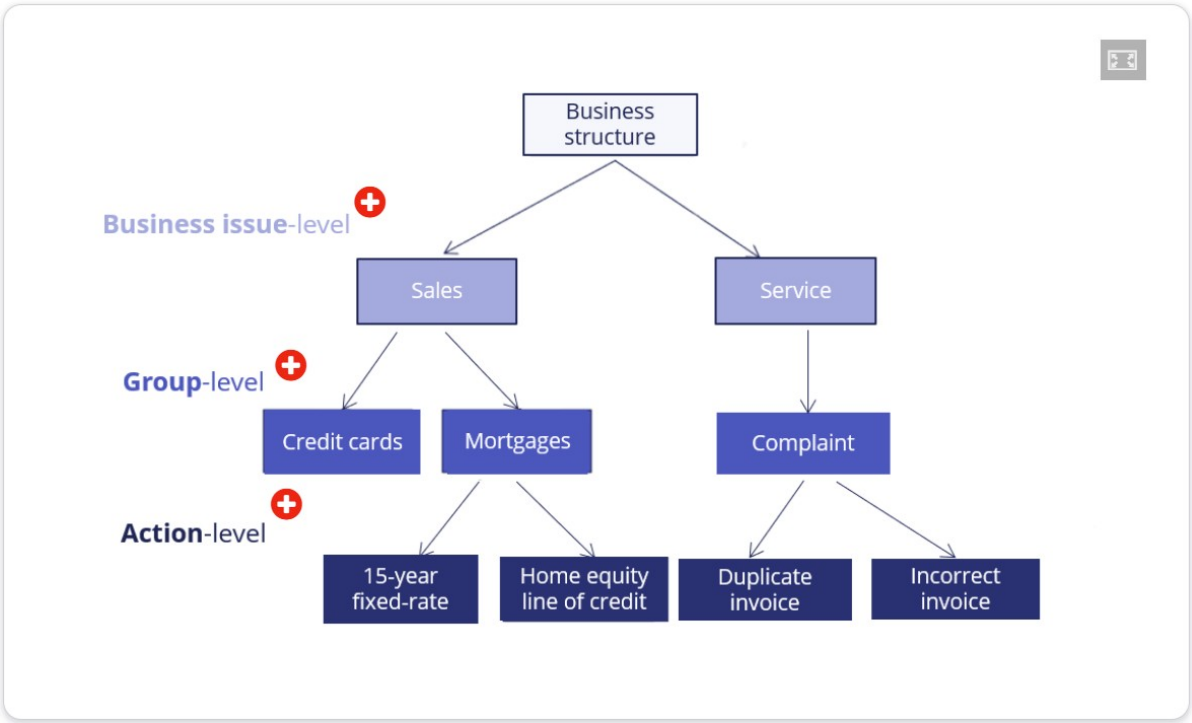
In Pega Customer Decision Hub, customer actions apply to various business issues and are organized into a three-level hierarchy. The business issue is the purpose of the actions that you offer to your customers. Each action that you prepare for your customers is associated

with an issue and a group. Because of the association, you must always define the hierarchy



before creating actions.

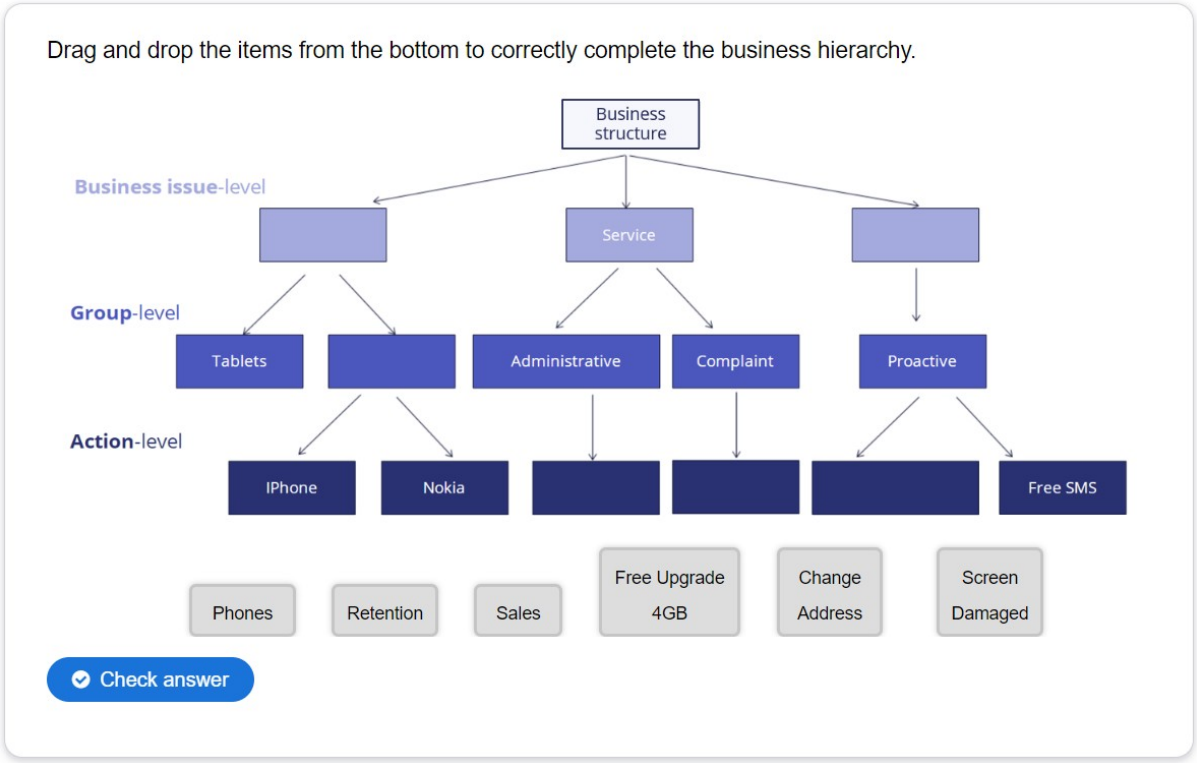
In the following image, click the **+** icons to learn more about the three-level hierarchy. Then, check your knowledge with the following interaction.



Business issue: In Pega Customer Decision Hub, a **business issue** represents the business area for which a customer action is applicable (for example, **Sales**, **Retention**, and **Service**).

Group: In Pega Customer Decision Hub, a **group** organizes actions into logical buckets (for example, **Credit Cards** or **Mortgages**).

Actions: In Pega Customer Decision Hub, an offering is referred to as an **action** (for example, **Reward card** or **30-year fixed rate)**. Each action that you prepare for your customers is associated with an issue and a group.



Drag and drop the items from the bottom to correctly complete the business hierarchy.

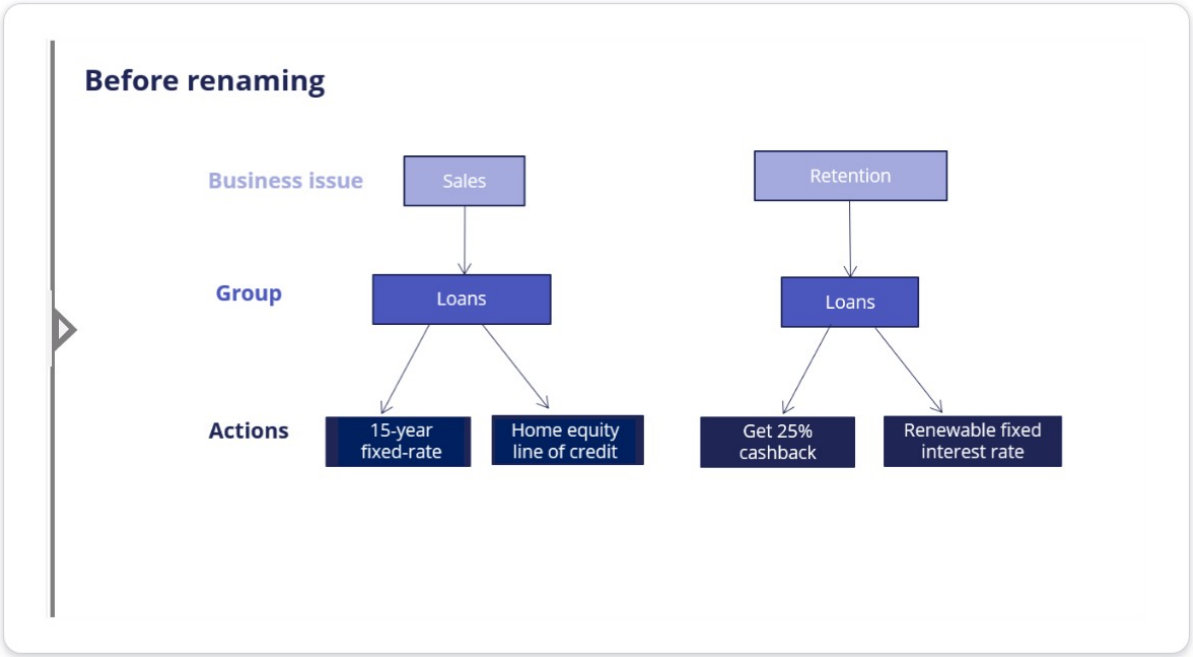
Correct feedback: **That's right! You selected the correct response.**

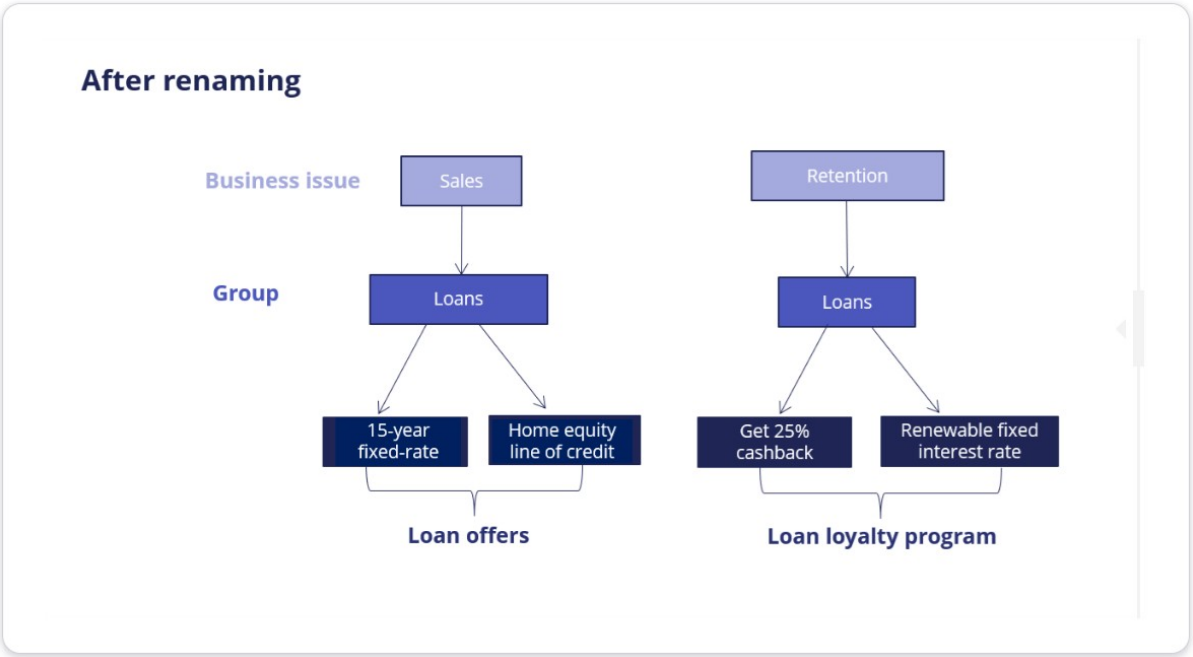
Incorrect feedback: **You did not select the correct response. Please try again.**

Customer actions and renaming

Pega Customer Decision Hub uses the default term actions to refer to messages delivered during customer interaction. If needed, you can change the term actions to a more appropriate term. For example, actions under a Loans group (Sales issue) can be changed to Loan offers whereas actions under a Loans group (Retention issue) can be changed to Loan loyalty program.

In the center of the following image, slide the vertical line to view a sample hierarchy with renamed actions. Then, check your knowledge with the following interaction.





Set 1: A customer action is any banner ad, retention offer, or service message.

Customer actions are properties that define their characteristics.

Set 2: A customer action can be presented on any customer interaction channel such as Web, Mobile, Contact center, or Social.

A customer action can be presented only on Web.

Set 3: A customer action is organized into a hierarchical structure. The default hierarchy is: Business issue -> Group -> Action.

A customer action is organized into a hierarchical structure. The default hierarchy is: Business issue -> Action -> Group.

Choose the correct statement.

Correct feedback: **Well done!**

Incorrect feedback: **We recommend you go through the material once more.**

Managing business structure

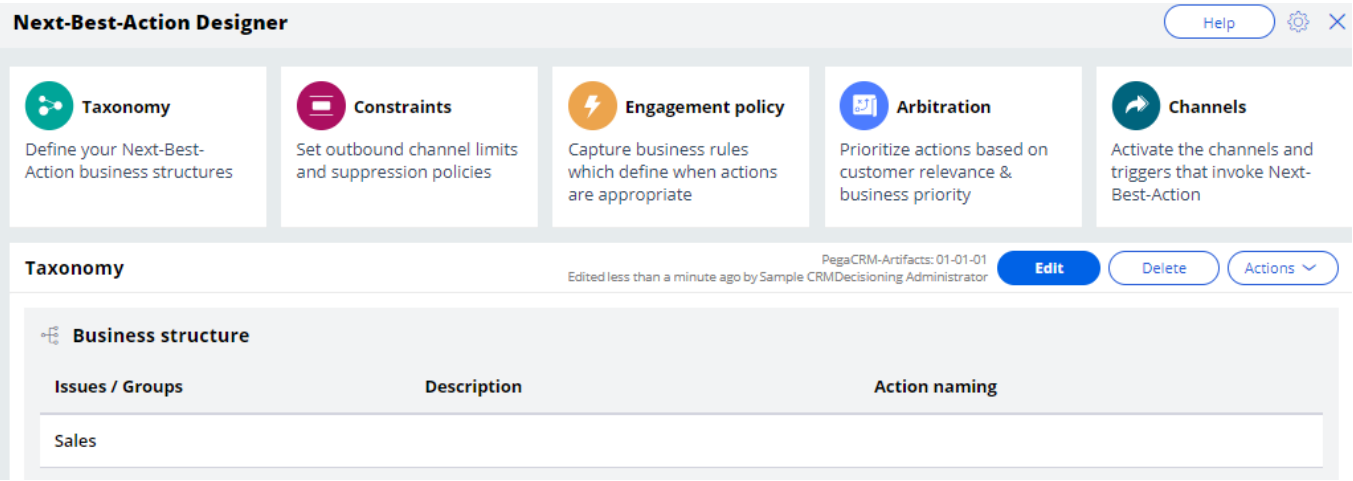
Introduction

In Pega Customer Decision Hub™, Next-Best-Action Designer is used to build the business issue/group hierarchies for your organization. Together, business issues and groups form the organizing structure for your customer interactions. Each Next-Best-Action that is presented to a customer is associated with a business issue and group.

Transcript

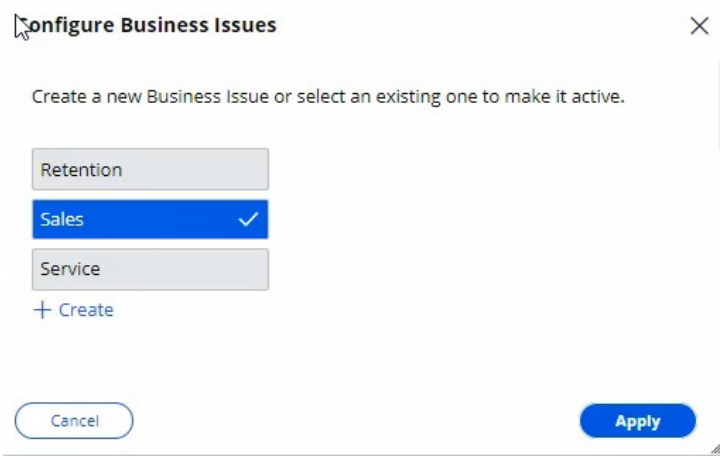
This demo will show you how to set up your business structure in Next-Best-Action Designer.

This is the Pega Customer Decision Hub™ portal. To manage the business structure, navigate to Next-Best-Action Designer. Customer actions are organized using a hierarchical business structure called Issues and Groups. Under the Taxonomy tab, you define the Issues and Groups that will play a role in the Next-Best-Action decisioning process.

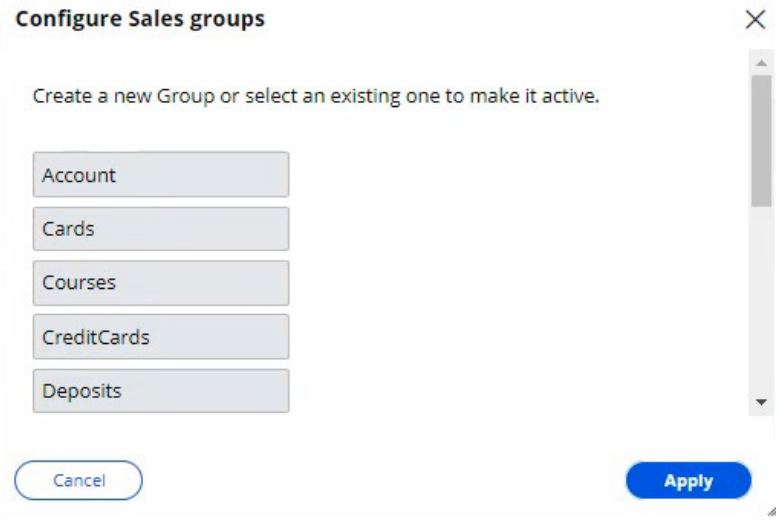


In this case, you will set up U+ bank's business structure based on their various areas of business focus. Currently, there is only one Issue in the business structure.

You can add, remove, or create new Issues here by editing and configuring the hierarchy. Note that, this can be edited only with an additional privilege. Here is a list of Issues that were created before. You can also create new Issues.



Now, add an existing Issue. Similarly, you can add, remove, or create business Groups. To add more groups, configure the groups.



To complete the configuration, save the changes.

This demo has concluded. What did it show you?

- How to add an Issue to the hierarchy.
- How to add Groups to an Issue.

Creating actions

Introduction

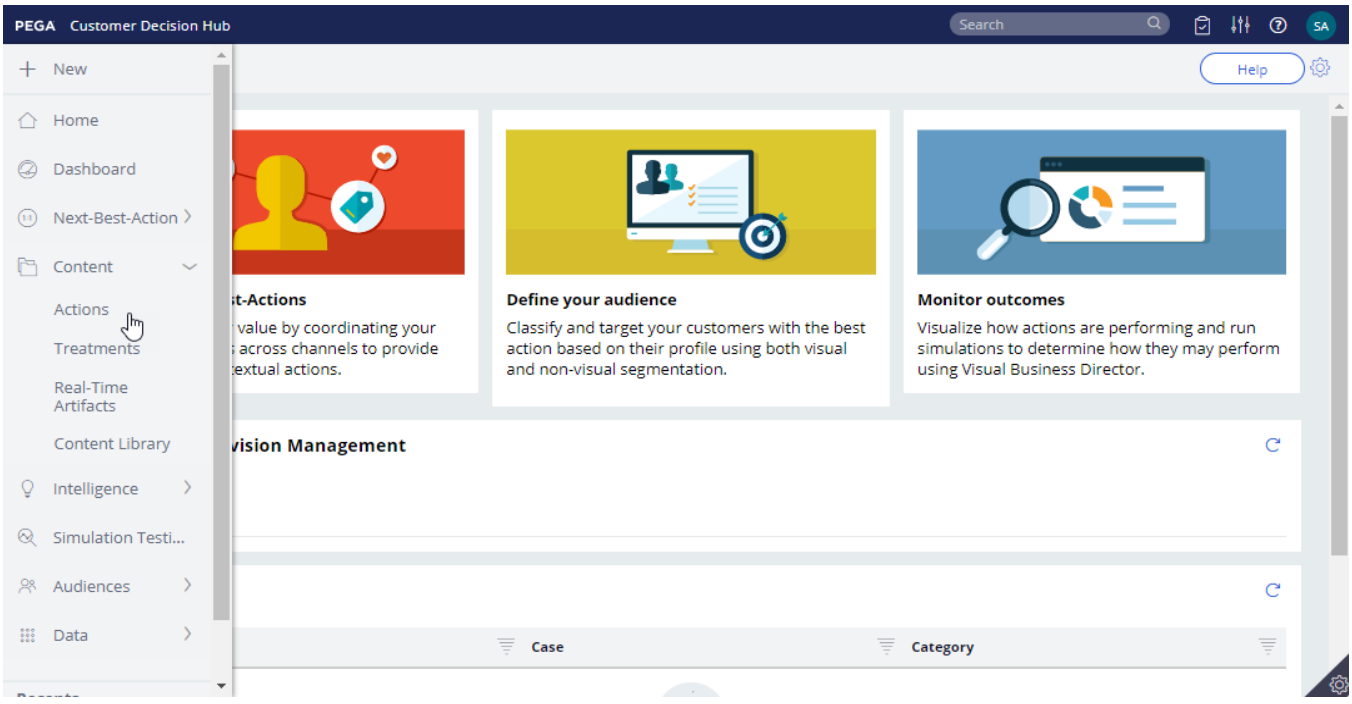
An action holds various details about a particular offering, such as Start Date, End Date, and Expected Revenue. Each action is backed by a decisioning proposition. The system automatically manages this relationship by creating, deploying, and deleting the proposition instances as needed. Since an action is closely tied to a proposition, it must always be created in the context of an issue and group.

Transcript

This demo will show you how to create an Action. It will also explain how to create Actions in bulk.

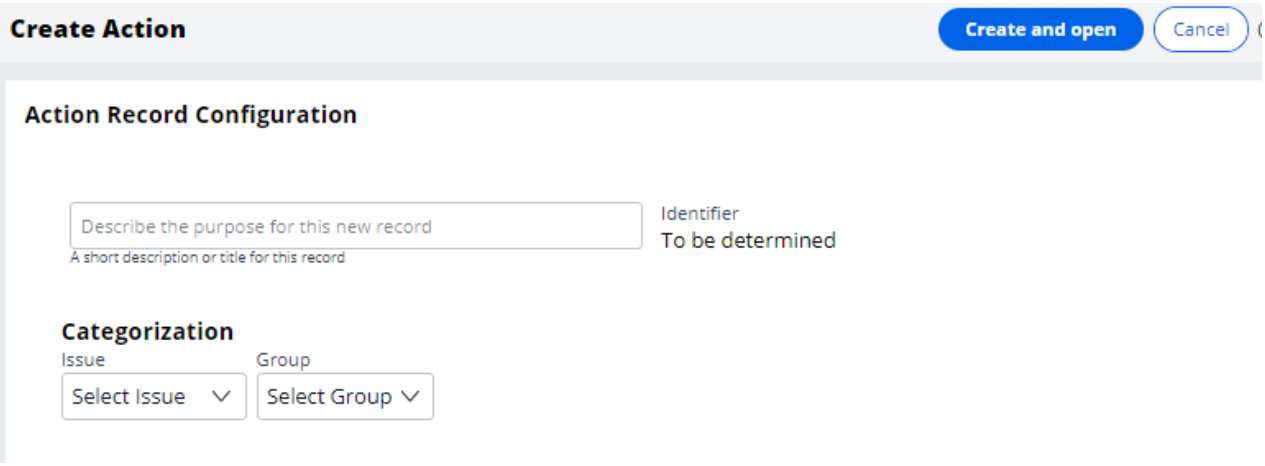
U+, a retail bank, recently introduced several new credit card offers that they would like to display to their customers. As a decisioning consultant, you have been tasked with creating these offers in the **Sales** Issue and **CreditCards** Group as per the pre-defined business hierarchy.

This is the Pega Customer Decision Hub™ portal. Actions are created and managed on the Actions landing page.



You can either create a single Action or Actions in bulk.

To create a single Action, enter a short description of the new Action. Select the appropriate **Issue** and **Group**. Now, open the Action.



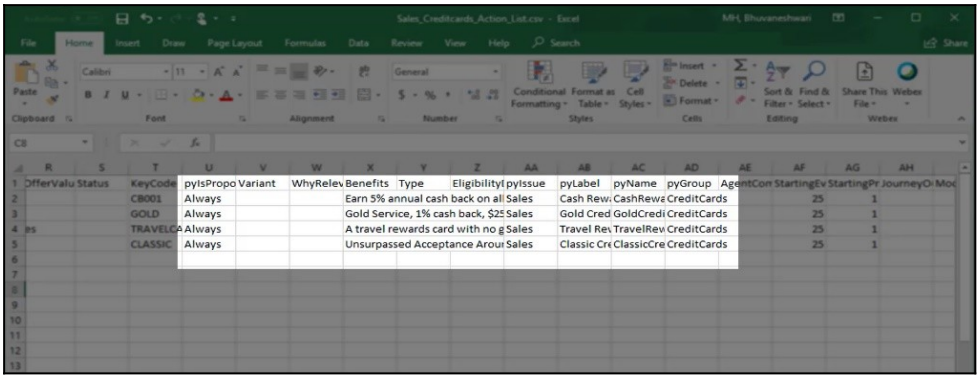
The attributes of an Action distinguish it from other Actions. Attributes are used by the Customer Decision Hub to select the right Action for a customer. Fill in the attributes relevant to this Action. For example, provide a **Description** that explains its purpose and **Benefits** that describe how this Action will benefit the customer.

Bear in mind that some of the values you enter may be customer-facing information. For example, U+ wants to display the content of the Benefits attribute when this Action is presented on its website. *To complete the configuration,* **save** *the Action.*

To view Actions within a certain Group, you can filter by a specific **Issue** and **Group**. This is the Action you just created. Thus far you have created a single Action. However, sometimes you may want to create multiple Actions at once. You can do that by uploading a list of Actions from a Comma Separated Value (CSV) file. To create such a CSV file you need to download a CSV template and fill it in.

Open the downloaded CSV template. You can use this template to add/update Actions. Add new Actions with corresponding attributes to the file.

Properties that start with py, such as pyName, pyIssue, pyGroup, pyLabel and pyIsPropositionActive are mandatory internal properties. It is important that you input these values in the correct format into the CSV file.



pyIsPropo	Variant	WhyRelev	Benefits	Type	Eligibility(	pyIssue	pyLabel	pyName	pyGroup	AgentCon	StartingEv	StartingPr	JourneyO
Always			Earn 5% annual cash back on all			Sales	Cash Rew	CashRewa	CreditCards		25	1	
Always			Gold Service, 1% cash back, $25			Sales	Gold Cred	GoldCredi	CreditCards		25	1	
Always			A travel rewards card with no g			Sales	Travel Re	TravelRew	CreditCards		25	1	
Always			Unsurpassed Acceptance Arou			Sales	Classic Cr	ClassicCre	CreditCards		25	1	

The property pyIsPropositionActive corresponds to the Availability property, which is visible on the Details tab of an Action. Possible values for this property are 'Always', 'Never' and 'Date'.

Choose 'Always' to ensure that the Action is selected during the Next-Best-Action decisioning process by the Customer Decision Hub.

Set it to 'Never' if you never want the Action to be selected, for example when you want to retire the Action

If you set the value to 'Date', you should enter a date range in the 'StartDate' and 'EndDate' fields. The Customer Decision Hub will select this Action only during that time period.

pyIssue corresponds to the Issue the Action was created for.

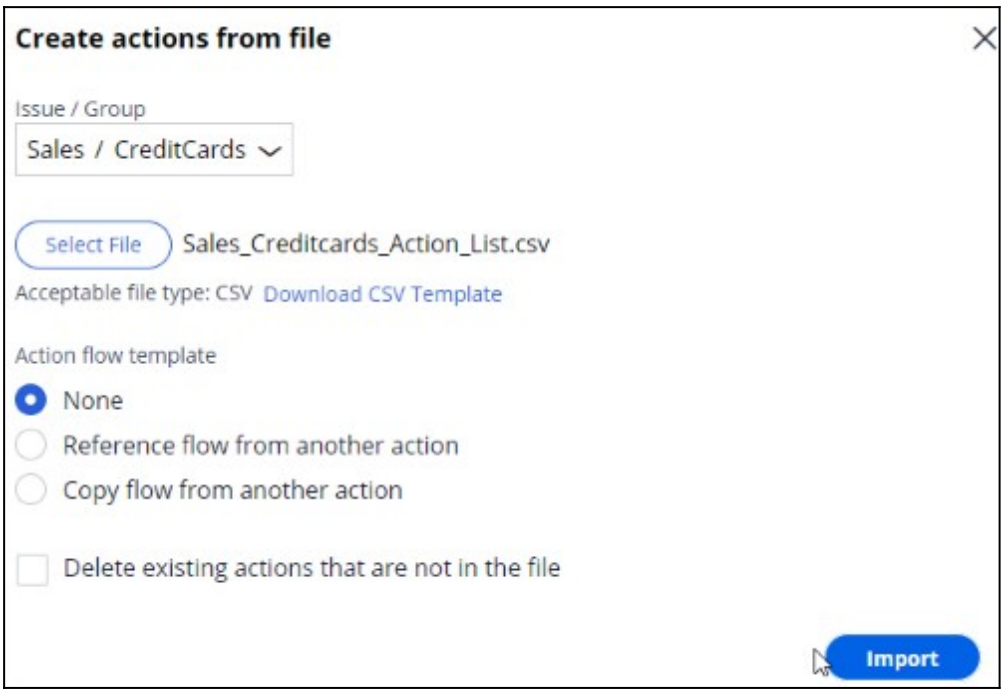
pyLabel corresponds to a short description of the Action.

pyName corresponds to the Action name.

pyGroup is the Group to which the Action belongs.

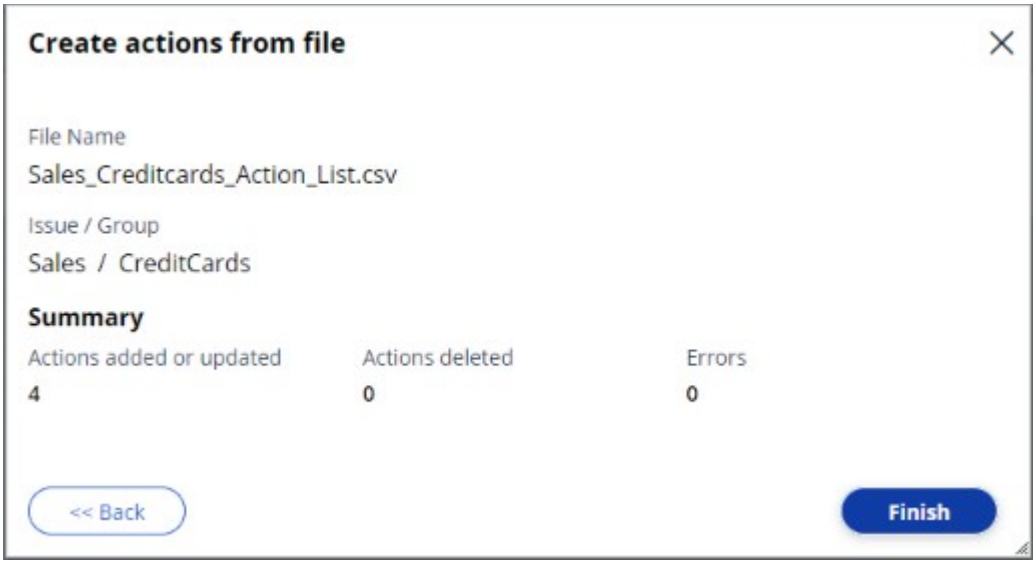
Save and close the CSV file.

Now, import Actions from the file**.** Select the CSV file that contains the list of Actions you want to import. If you want to delete existing Actions from this Issue/Group that have been created in the system but not in the CSV file, you can select this option.



For now, you are only interested in adding new Actions.

Notice that the window displays a summary of the result of the import.



For example, when a duplicate Action is added, the Errors count is incremented, and you can download the error file to learn the exact issue. Complete the import. Notice that the new Actions are now listed on the **Actions** page.

This demo has concluded. What did it show you?

- How to create an Action.

- How to set Action attributes.
- The most important properties of Actions in a CSV file.
- How to create multiple Actions using a CSV file.

Renaming actions

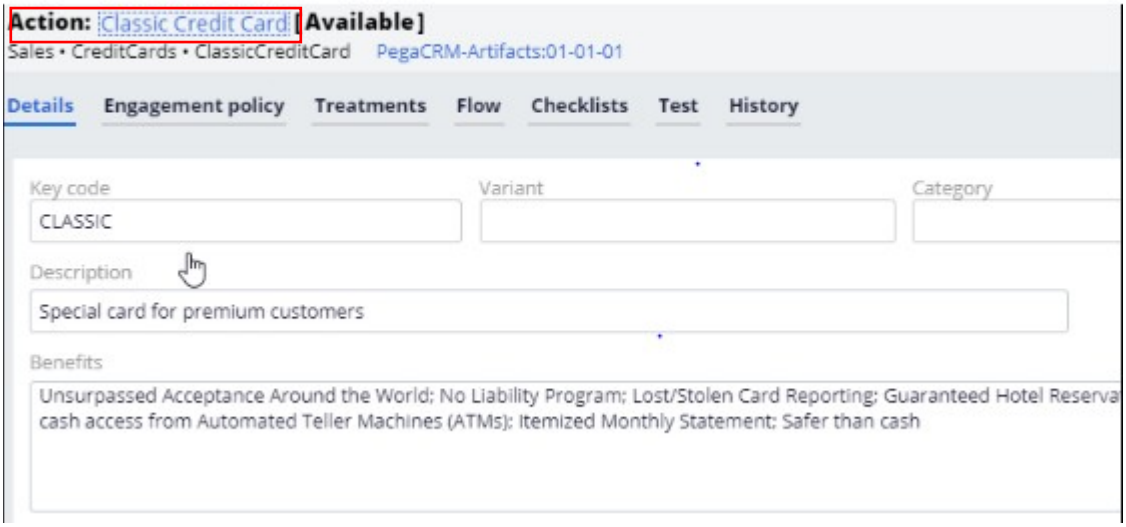
Introduction

By default, Pega Customer Decision Hub uses the term ‘actions’ to refer to messages delivered during a customer interaction. If needed, you can change this to a more appropriate term, such as Promotions or Nudges. Actions can be renamed with different terms based on the business issue and group to which the product belongs.

Transcript

This demo will show you how to change the default naming of Actions to something that better reflects their business context.

This is the Pega Customer Decision Hub™ portal. On the **Actions** landing page, you can view all the Actions that have been created. To view Actions within a certain Group, you can filter by a specific **Issue** and **Group**. In this case, filter Actions in the **Sales** Issue and **CreditCards** Group. Open an Action to view the name. Notice that the Sales/CreditCards Group uses the default terminology ‘**Action**’.

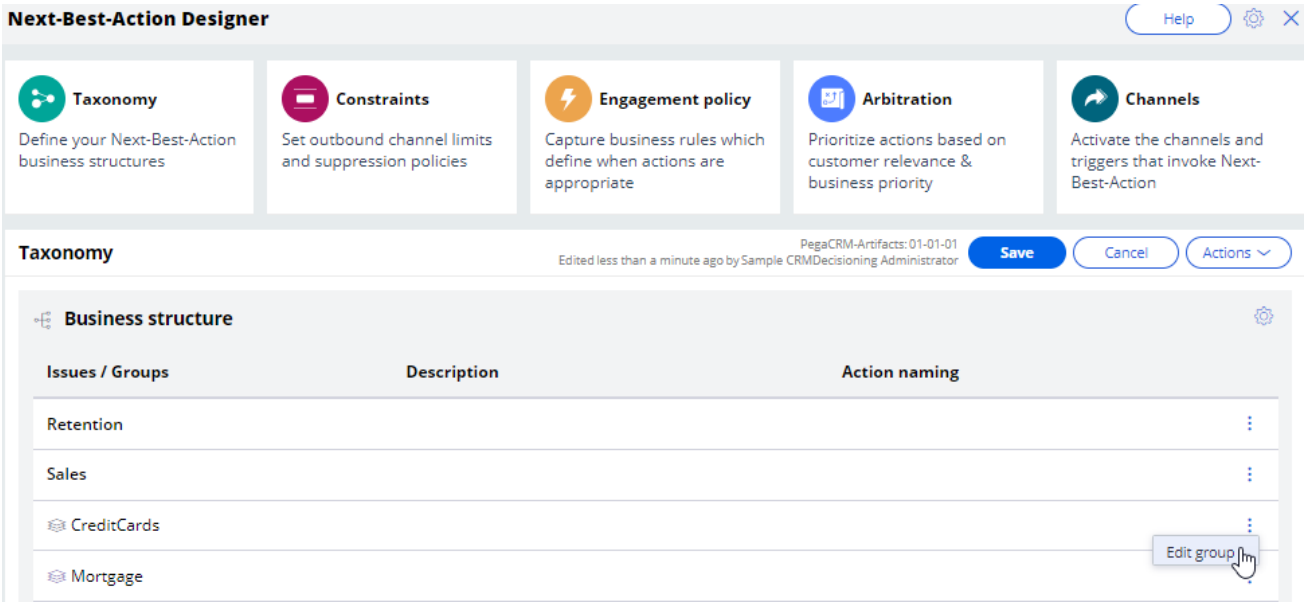


U+ bank wants to rename Actions under the **Sales** Issue and **CreditCards** Group to better suit their business purpose. The Actions under the **CreditCards** Group are always promotional credit card offers, therefore the bank wants to change the naming convention from ‘Action’ to ‘Offer’.

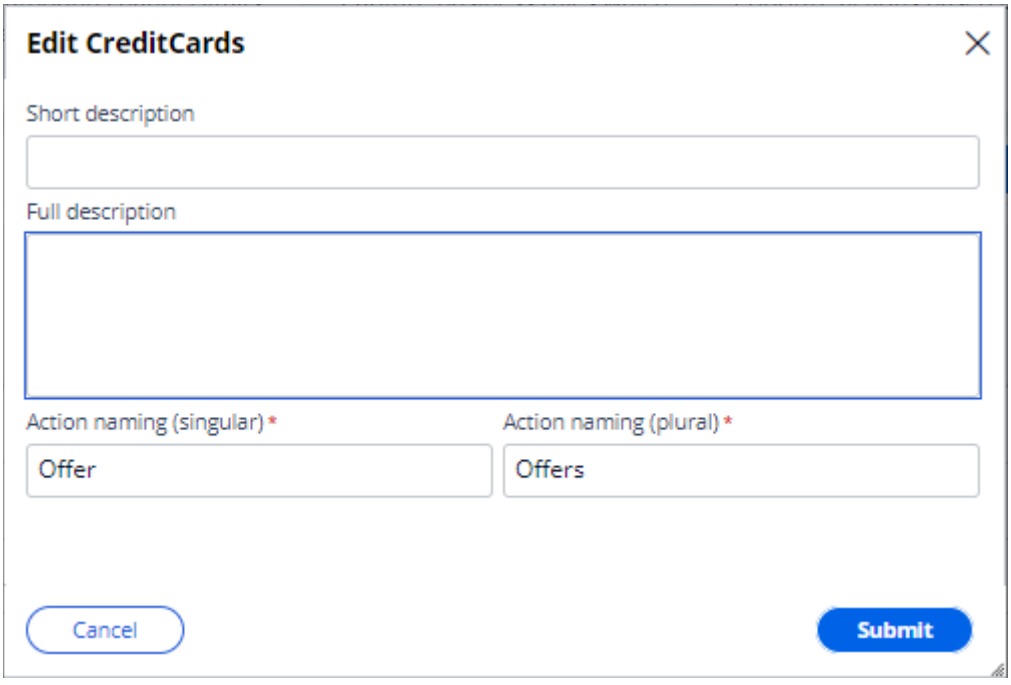
You can change the default naming convention of Actions in Next-Best-Action Designer.

To manage the business structure, navigate to the Taxonomy tab of Next-Best-Action Designer. The 'Action naming' convention is set in a business Group's configuration settings. This can be set for each group in the business hierarchy.

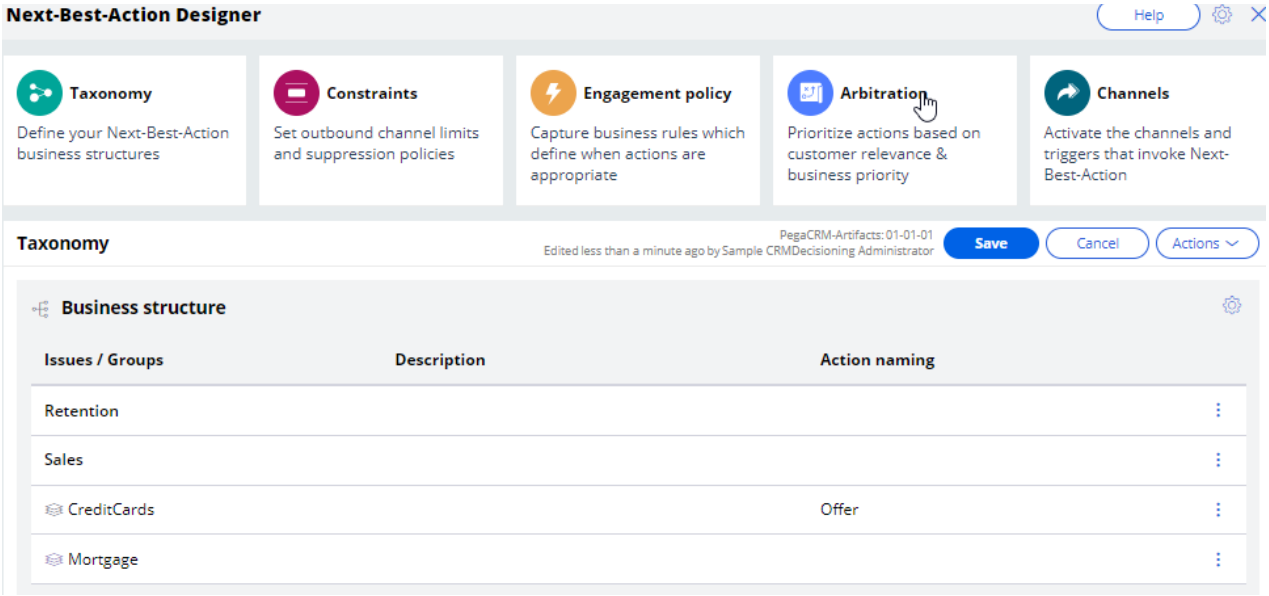
Edit the hierarchy to modify the Group attributes.



In this case, change the Action naming convention to Offer.



To complete the configuration, save the changes. Verify that the Action is renamed. Open any Action under the **Sales** Issue and **CreditCards** Group to view the effect of renaming.



From now on, Actions under Sales/CreditCards will be referred to as Offers.

This demo has concluded. What did it show you?

- How to change the default naming convention of Actions, to a name that better reflects their business context.

Presenting a single offer on the web

Description

Learn about real-time containers and how they are used to display actions selected by Pega Customer Decision Hub in real-time channels. Gain experience creating and configuring real-time containers by learning how to configure Next-Best-Action Designer to select a single offer that will be displayed on a website.

Learning objectives

- Describe the concept of real-time containers
- Explain how to create and configure a real-time container
- Explain how to configure Next-Best-Action designer to display an offer on the web

Real-time containers

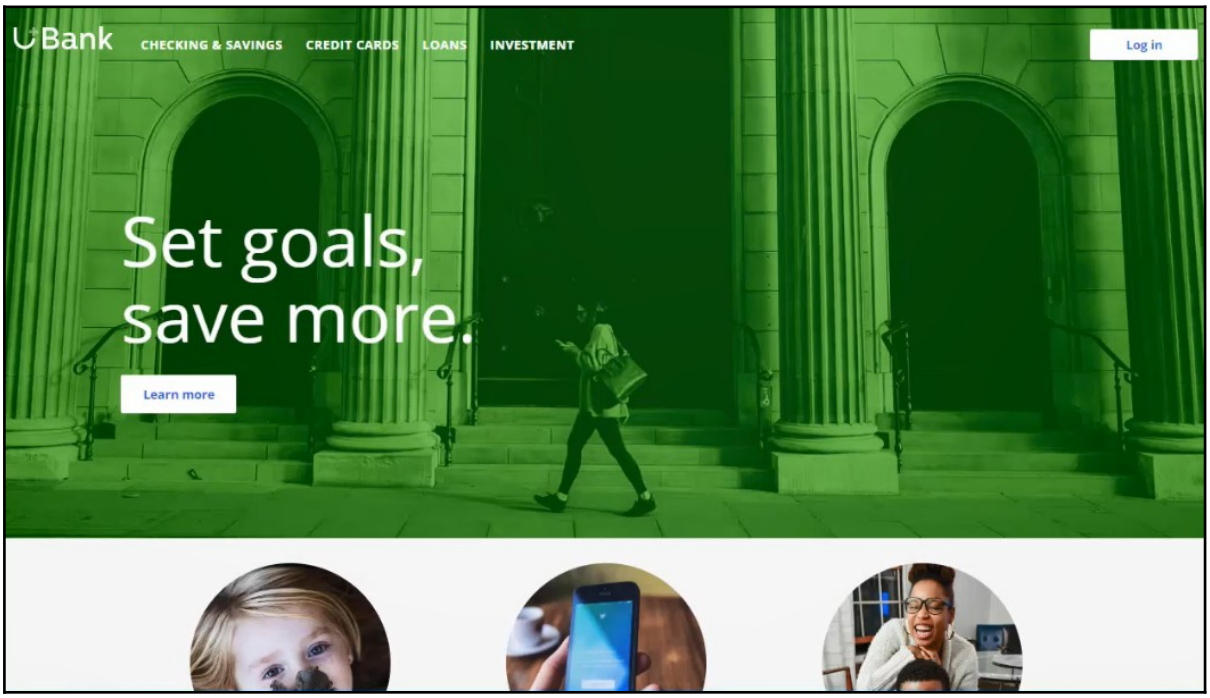
Introduction

A real-time container is a service that manages communication between Pega Customer Decision Hub and external channels. An external real-time channel is any channel that presents actions selected by the Customer Decision Hub to a user or customer. For example, a website, a call-center application, or a mobile application.

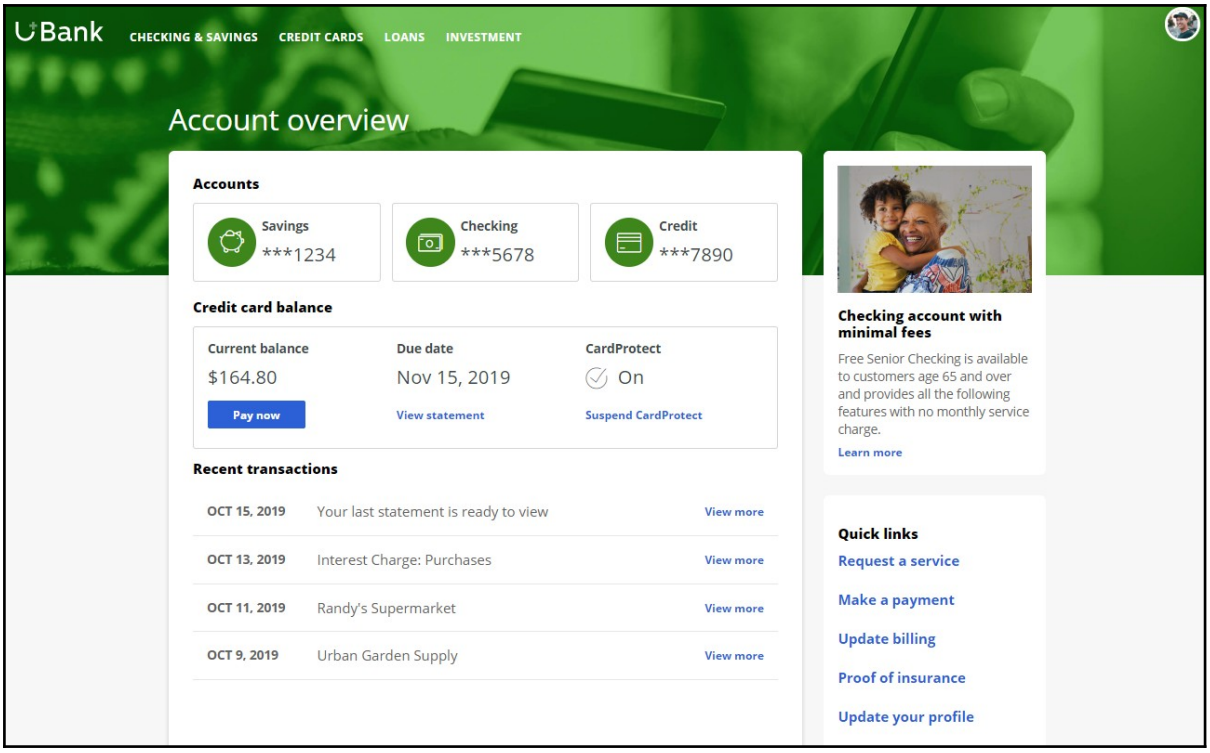
Transcript

This video explains the concept of real-time containers, which manage communication between the Pega Customer Decision Hub™ and external channels.

This is the website of a retail bank called U+ Bank.



The bank plans to promote new offers on the account page, which is displayed when customers log in.

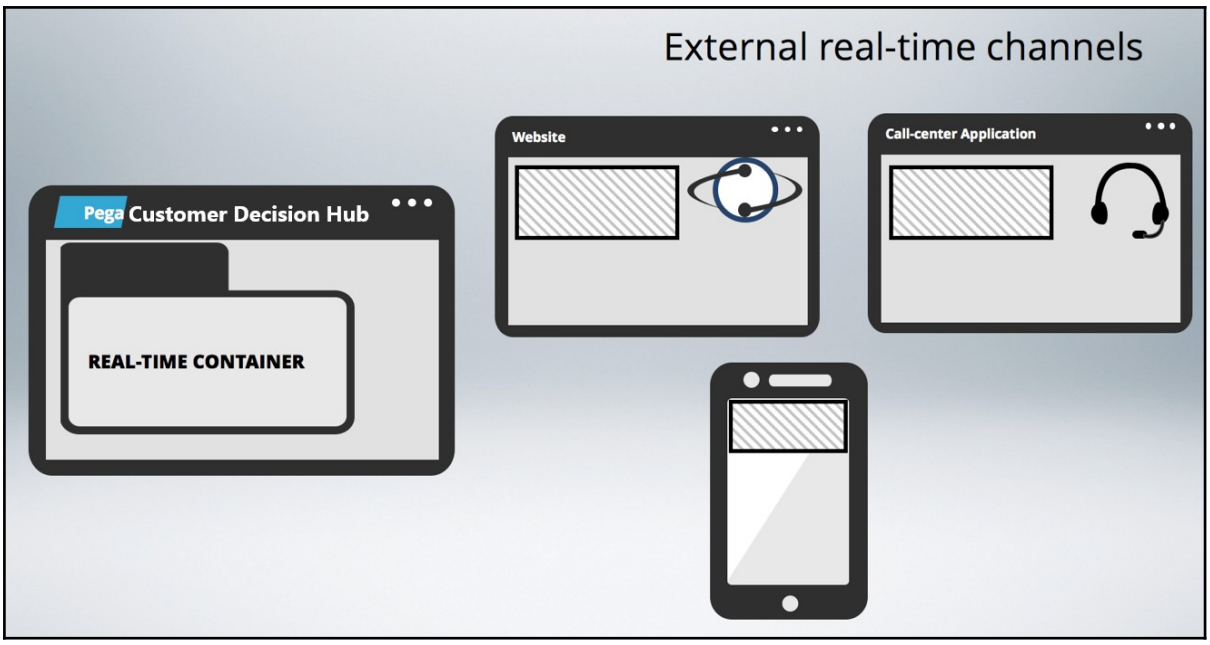


The marketing department wants to leverage the Customer Decision Hub's Next-Best-Action capability to display the right offer for each customer.

The Customer Decision Hub's real-time container functionality is used to implement this requirement.

A real-time container is a placeholder for content in an external real-time channel.

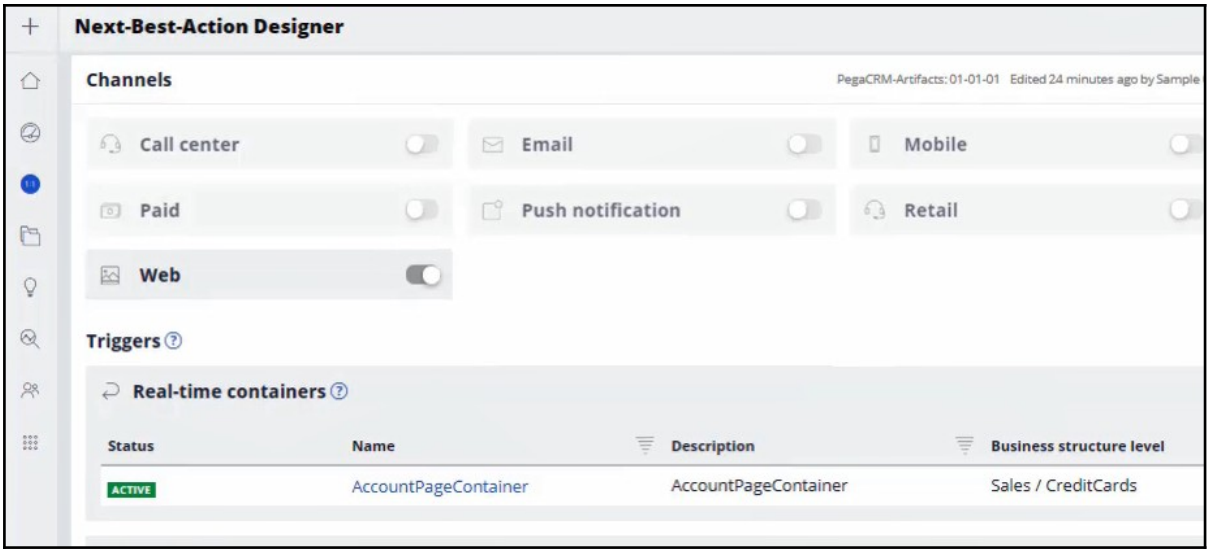
An external real-time channel is any channel that presents actions selected by the Customer Decision Hub to a user or customer. For example, a website, a call-center application, or a mobile application.



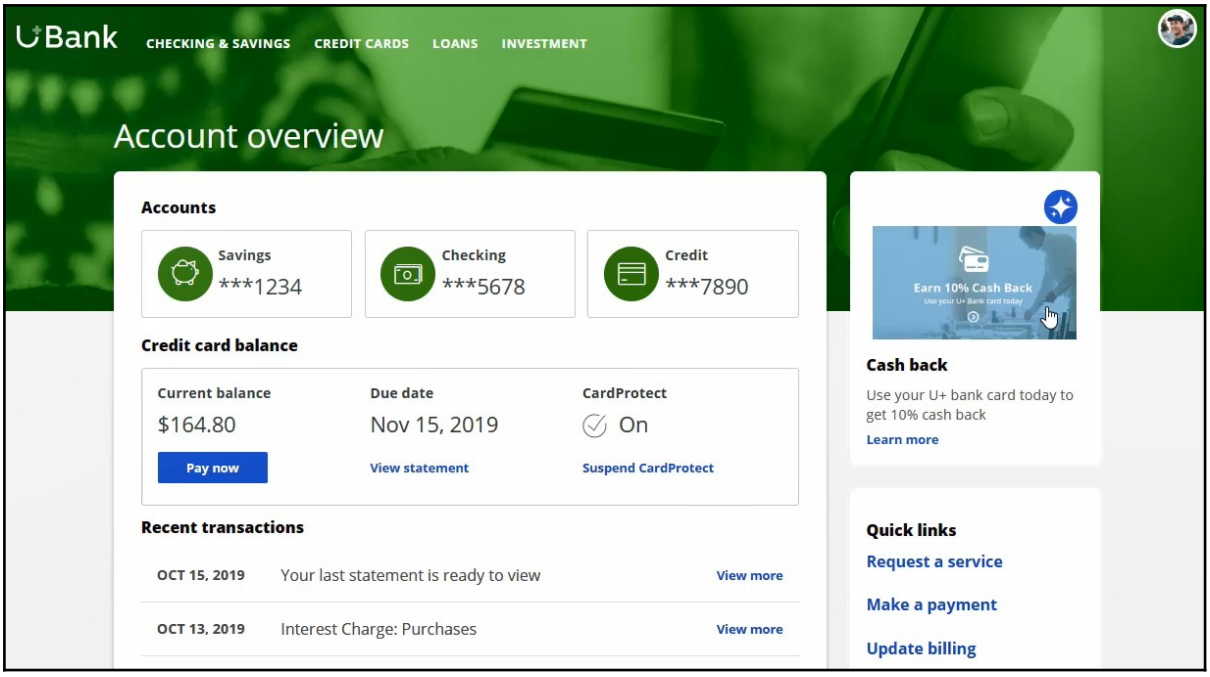
Here's how the website invokes the real-time container to present credit card offers on the account page.

In the Customer Decision Hub's Next-Best-Action Designer, a real-time container called "Account Page Container" is configured. The website invokes this real-time container before loading the account page.

The Customer Decision Hub then evaluates the actions from the associated Issue/Group, which in this case is Sales/CreditCards and returns the resulting offer details back to the website.



The website then loads the account page with the content returned by the Customer Decision Hub, such as the offer image, description and other relevant attributes.



Meanwhile, the Customer Decision Hub records these customer interactions in the Interaction History. An Impression is recorded to indicate that the action was shown to the customer, a Click-through is recorded when the customer clicks on the action. Marketers use these metrics, i.e. Impressions and Click-throughs, to measure the level of customer engagement, and therefore, the success of the marketing effort.

Creating and configuring a real-time container

Introduction

Learn how to create and configure a real-time container which allows you to manage communication between Pega Customer Decision Hub and external channels.

Transcript

This demo will show you how to create and configure a real-time container.

To create real-time containers, navigate to the Real-Time Artifacts landing page.

Enter a short description of the new real-time container.

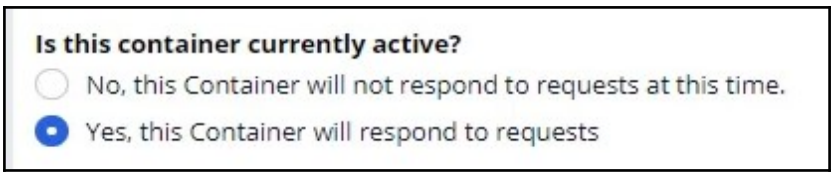
An external channel uses the real-time container's identifier when it makes a request to the Pega Customer Decision Hub.

You can change the identifier to a value that the external channel in your environment expects.

For example, the U+ Bank website is pre-configured to call a real-time container with the identifier Ubank_home_banner.

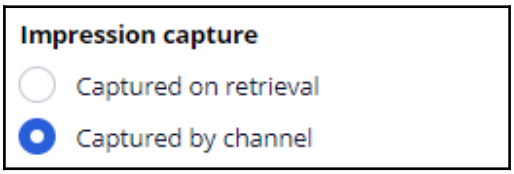
Now, open the real-time container.

Here you can turn the real-time container's ability to respond to requests from external channels on or off.



Keeping the default value will allow the Customer Decision Hub to serve requests from the website.

‘Impression capture’ allows the external channel to control how the Customer Decision Hub records impressions.

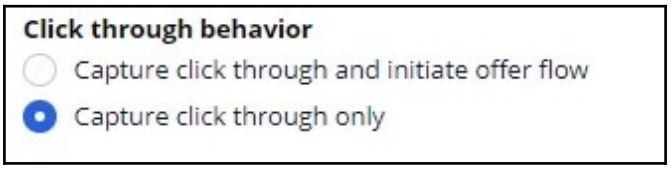


‘Captured on retrieval’ means that the Customer Decision Hub records an impression in the Interaction History immediately after sending the action details to the external channel.

‘Captured by channel’ means that the Customer Decision Hub does not immediately record an impression. Instead, the external channel can explicitly request that the Customer Decision Hub records an impression at a later point in time.

In this case, the bank wants the impressions not followed by a click to be captured, so keep the default value.

To record a click in the Interaction History without initiating an action flow for the customer, keep the default value.



This option is suitable for actions that do not have a defined flow, for example, on the Web channel when a customer clicking on an ad does not trigger any follow-up steps.

Here you can view the list of Next-Best-Action strategies that you have associated with this real-time container.

Save the configuration.

Navigate to the Containers tab to see the newly created real-time container.

This demo has concluded. What did it show you?

- How to create a real-time container

- How to configure the real-time container settings

Presenting a single offer on the web

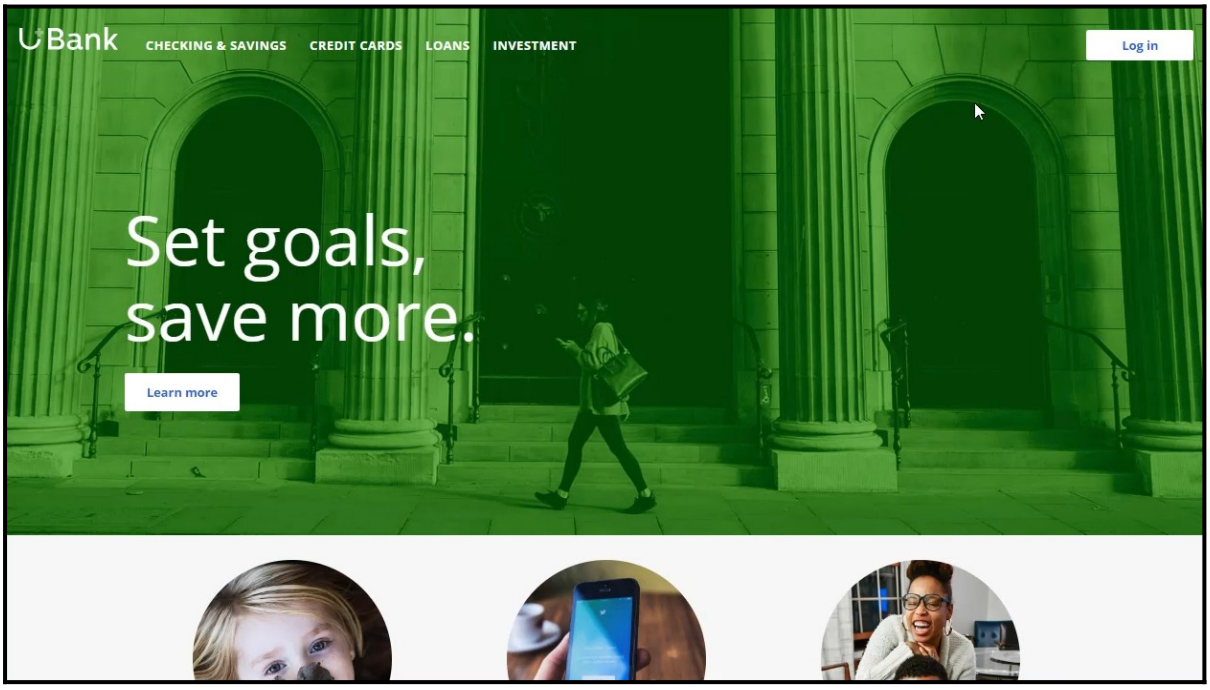
Introduction

Pega Customer Decision Hub is the always-on customer brain used to select the right offer to be presented to each customer in any real-time channel. Learn how to configure Next-Best-Action Designer to select a single offer that will be displayed on a website.

Transcript

This demo will show you how to configure Next-Best-Action Designer to select a single offer that will be displayed on a website.

U+, a retail bank, would like to use the Pega Customer Decision Hub™ to display a single offer on its website.



U+ bank wants to make offers related to credit cards and display the same ‘Cash back’ offer to every customer who logs in to the web site.

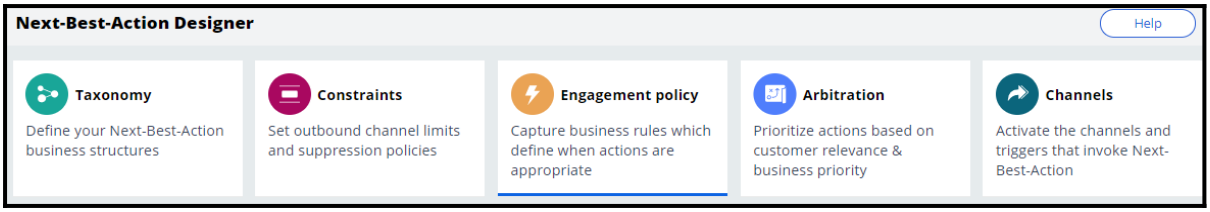
For example, if customer Troy logs in to his Accounts page, the ‘Cash back’ offer is displayed.

If Troy clicks on the ‘Learn more’ button, it takes him to the Offers page.

This page shows the offer details.

To implement this business requirement, navigate to Next-Best-Action designer.

Here you can configure business rules to define when specific actions or groups of actions are appropriate for customers.



Notice that the NBA hierarchy currently has three Business issues with Groups under them. In this case, U+ wants to promote credit card offers. So, open the CreditCards Group.

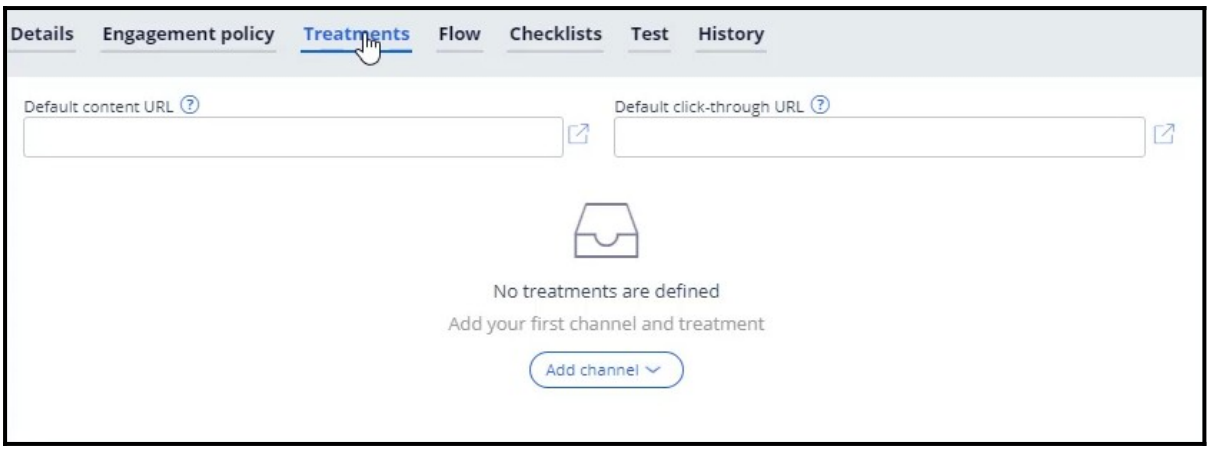
You can configure the actions here.

A consultant has already created a few actions under Sales/CreditCards. However, in this scenario, the bank wants to show only the ‘Cash back’ card.

Now, open on the ‘Cash back’ offer.

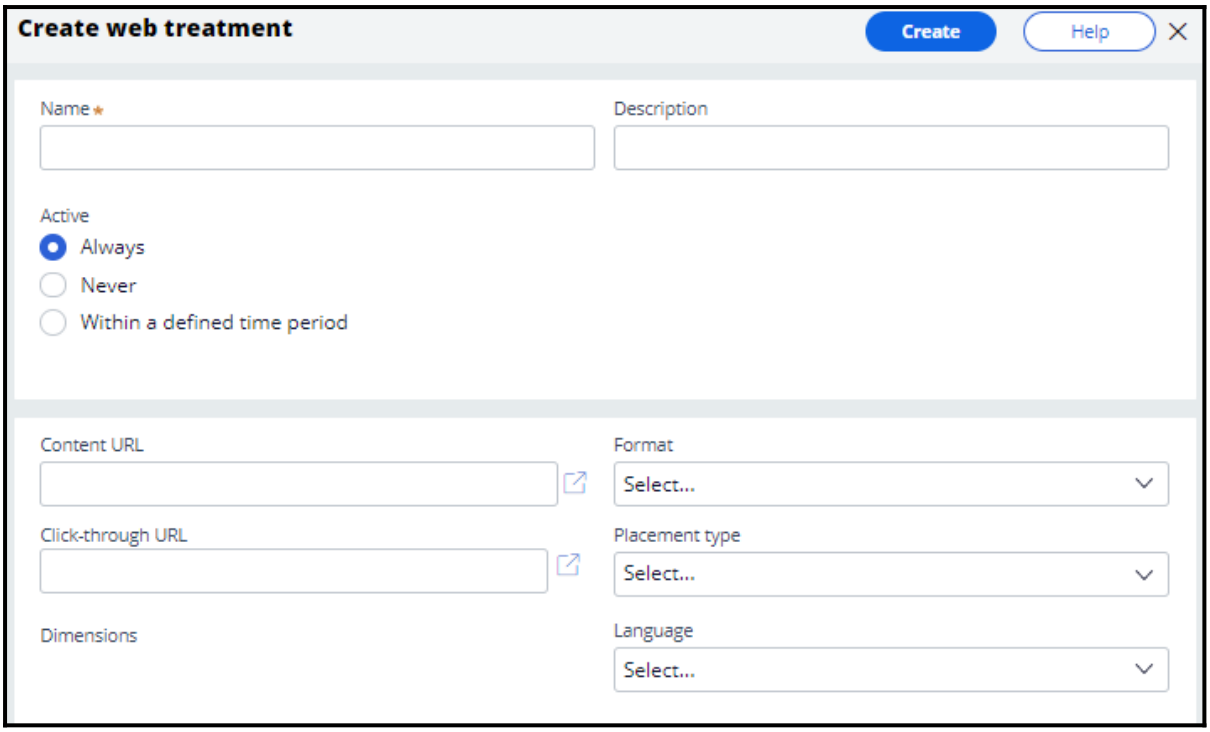
To display an offer, you need to add a treatment that is specific to the channel.

In this scenario, U+ bank wants to present the offer on their website, so select the right treatment type.



A web treatment represents the message that you want to communicate visually to your customer on the web channel. You can either use an existing treatment or create one here.

Now, fill in the required fields for the web treatment.



Here you provide a link to an image that will display the action for this treatment.

Once you provide the link, a preview of the content is displayed.

This is the URL that you want the customer to go to when they click on the action.

Now, select the intended location and style of the treatment design. For example, the treatment can appear as a large central banner, a rotating strip of images, or a footer on the website.

In this scenario, select Tile to display the ‘Cash back’ offer on the top right of the Account page.

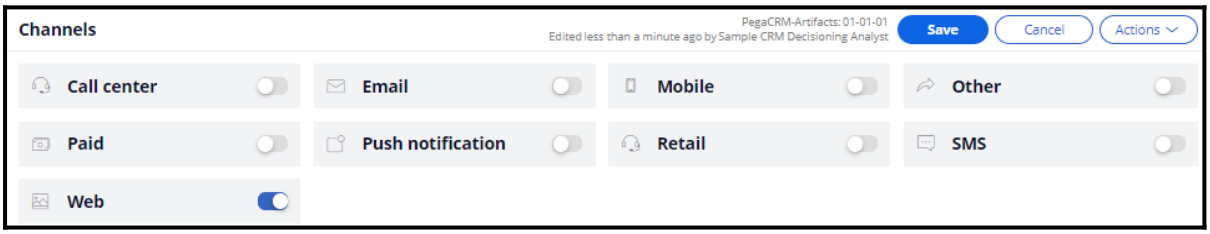
You can specify the language of the treatment if required. Specifying the treatment language allows Pega Customer Decision Hub to consider the customer’s preferred language when selecting the treatment.

Add the web treatment you just created.

In this phase, U+ does not have any further eligibility or prioritization requirements for this action. Save the changes.

Here, you can enable the channels and triggers that will invoke Next-Best-Actions.

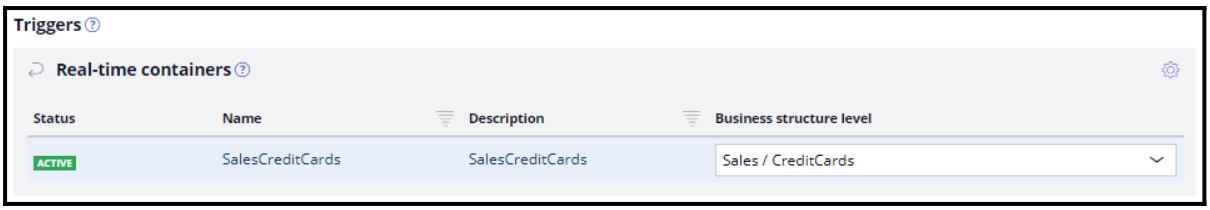
As U+ wants to display the offer on the web, enable the web channel.



Now, configure the real-time container that the U+ website will use to display the offer banner on the account page.

The real-time container manages communication between the Pega Customer Decision Hub and external channels such as the web and call center. A decisioning consultant has already configured a real-time container for you, so select it to be added to your configuration.

Once the real-time container is added, configure it to select the results from an appropriate Business issue and Group. In this case, U+ bank wants to display the ‘Cash back’ offer, which is under Sales/CreditCards.



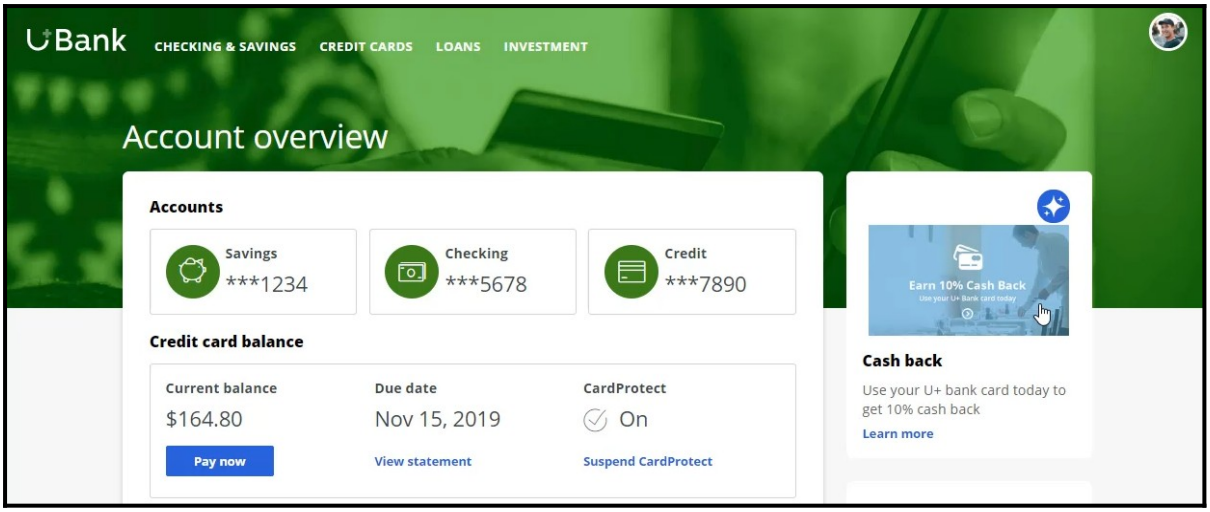
With that, all the necessary configuration for this scenario is complete. Save the changes for the configuration to take effect.

The account page on the U+ Bank website has been configured to use the real-time container with the name 'SalesCreditCards' and with Placement type 'Tile'.

The web treatment is shown as a tile on the top right of the page.

When Troy clicks on the ‘Learn more’ button, it takes him to the URL that was configured as the click-through URL for the treatment.

If another user logs in, they will see the same offer.



This demo has concluded. What did it show you?

- How to configure Next-Best-Action designer to display a web treatment on the U+ bank website.

Defining customer engagement policies

Description

Engagement policies are the set of conditions such as eligibility, applicability, and suitability that qualify an offer or a group of offers for a customer. As a result of engagement rules, customers will see only those offers that the organization believes they should be exposed to.

Learning objectives

- Define engagement policy conditions in Next-Best-Action Designer at the action group level
- Define engagement policy conditions at the action level
- Differentiate between eligibility, applicability and suitability conditions
- Conduct persona test for customer personas with specific characteristics to evaluate the next-best-action strategy results

Customer engagement policies

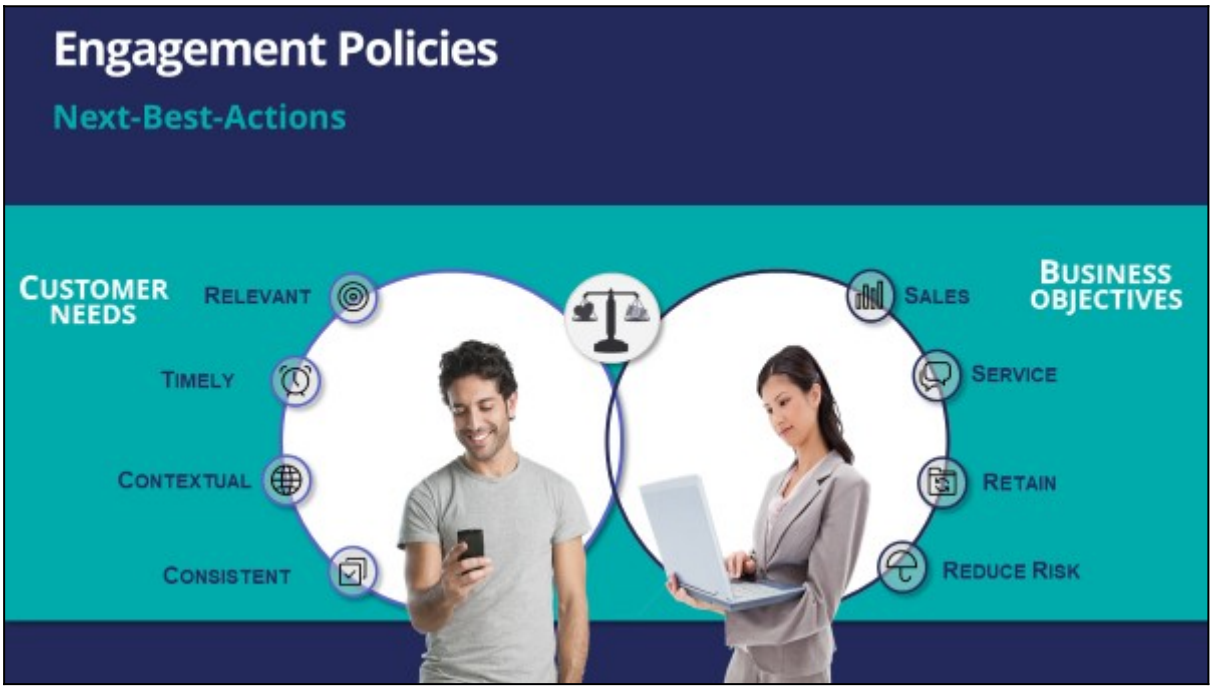
Introduction

Engagement policies are a set of business rules and practices used by the organization to determine which customers are eligible for which Next-Best-Actions. These policies allow you to specify the conditions under which an action or group of actions are eligible for a customer.

Transcript

This video explains the concept of customer engagement policies.

The Pega Customer Decision Hub™ combines analytics, business rules, customer data, and data collected during each customer interaction to create a set of actionable insights that it uses to make intelligent decisions. These decisions are known as the Next-Best-Action. Every Next-Best-Action weighs customer needs against business objectives to optimize decisions based on priorities set by the business manager.



Typically, the business defines a set of rules that make certain actions available to certain customers. This set of rules is called an engagement policy.

As part of an engagement policy, three types of conditions are defined – Eligibility, Applicability, and Suitability.

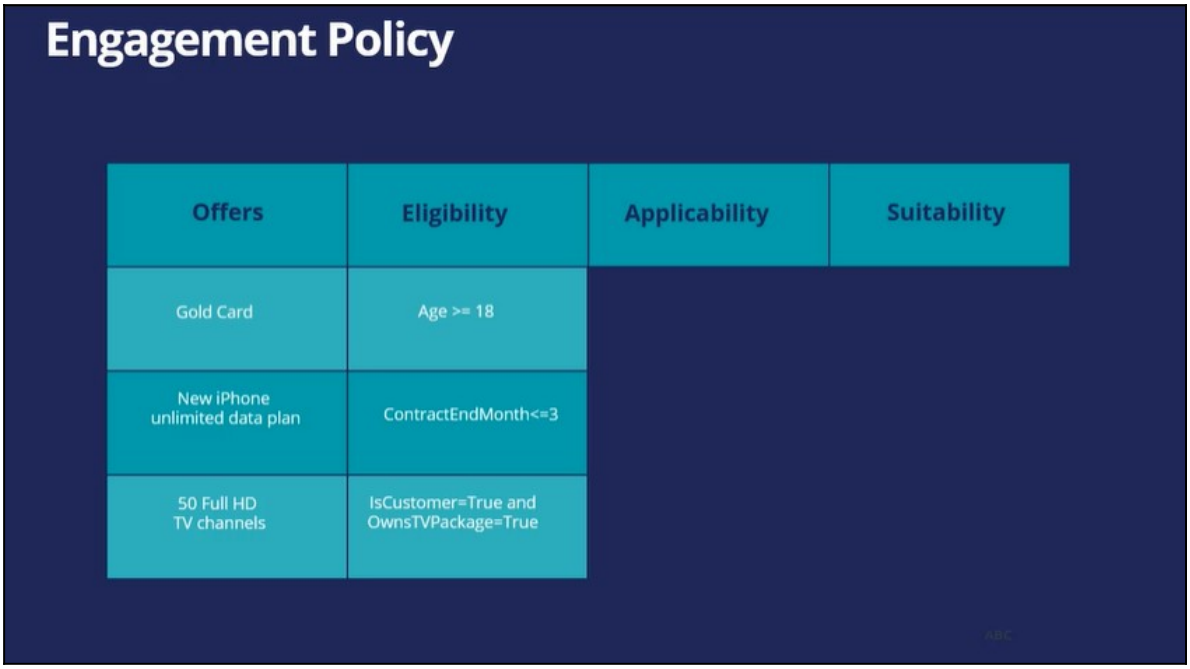
Consider the following examples: a retail bank is promoting a Gold Credit Card; a telco is offering a new iPhone upgrade with an unlimited data plan; and a communications and media company is promoting a new bundle of HD channels.

Let's see how to define engagement policy conditions that will ensure the bank's Next-Best-Action decisions support these promotions.

In Eligibility, you define strict rules for what is legal, and even possible, to offer customers. For example, to be eligible for the Gold Card offer, customers must be 18 years or older.

Similarly, for the iPhone upgrade offer, customers are eligible for a new contract only if their old contract ends in less than three months.

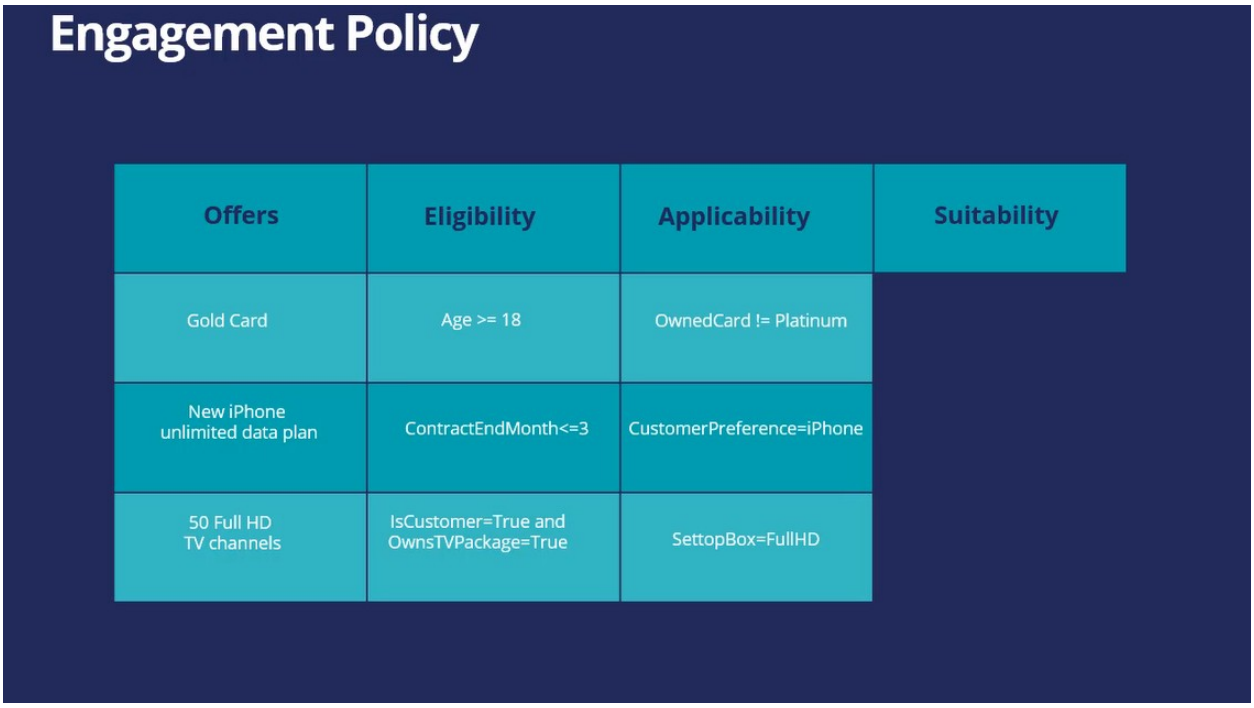
For the TV channels offer, customers must already own a TV subscription. This offer is not available for customers who have only mobile or landline subscriptions.



In Applicability, you specify rules for limiting what to offer based on a customer's current situation**,** which is often defined by the products they currently have. These rules are not as rigid as those for Eligibility.

For example, a Gold Card is not applicable if the customer already has a higher value card, such as a Platinum Credit Card. If a customer already has a Platinum Card, they might be eligible for the Gold Card, but the Gold Card is not applicable to them. If they ask for it, they may get it, but the business would prefer not to present them with the Gold Card offer.

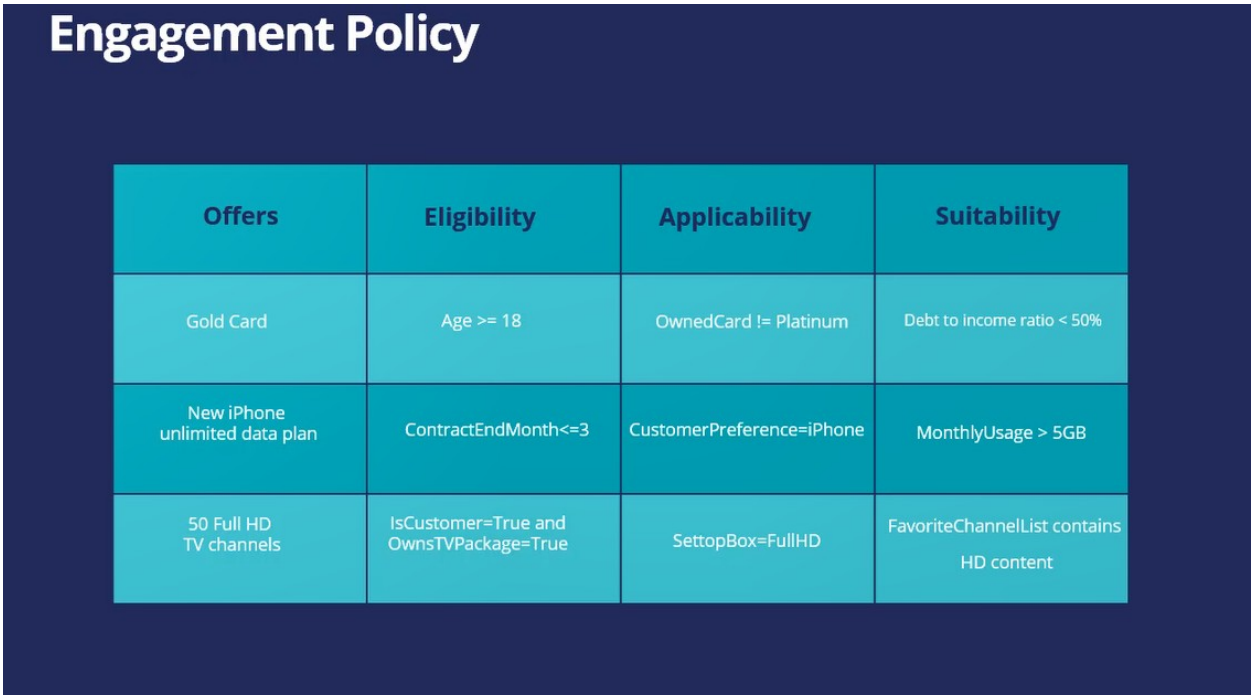
Similarly, with the iPhone upgrade offer, if a customer explicitly expressed in the last survey that they weren't interested in an iPhone, this action is not applicable to them. For the TV channels offer, the business does not want to advertise HD channels to a customer who has recently bought a set top box that is not capable of HD.



In Suitability, you specify conditions that define an offer as appropriate for a customer. Suitability rules are in place to promote the concept of empathy. That is, to help an enterprise be empathetic toward their customers and refrain from making offers that may not be a good fit.

For example, as the Gold Card is a high value card, it is only suitable for a customer whose debt-to-income ratio is below a certain threshold. Although a customer might be eligible for it, and the offer might be applicable to them, it would be inappropriate to market it to them, as there is a risk of default.

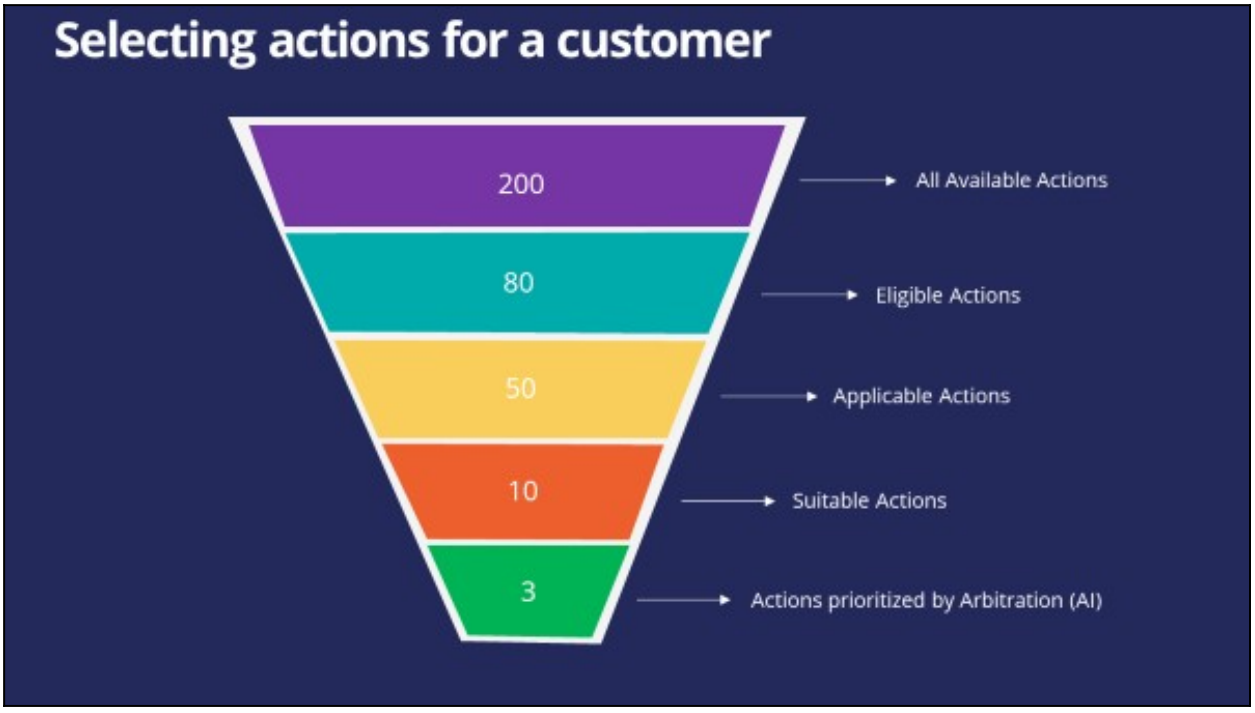
Similarly, an unlimited data plan is not suitable to be offered to a customer with low Internet usage. In the last example, if the customer's favorite TV shows are not available in HD, then it's not empathetic to offer them the new HD channels package.



U+, a retail bank, has configured its engagement policy to suit its own business objectives as well as the needs of its customers.

In this scenario, a marketer for U+ has designed 200 actions that could be presented to customers. To select the Next-Best-Actions from these, the Pega Customer Decision Hub first checks eligibility conditions and filters the actions. Then, the applicability conditions are run to filter them further. Next, the suitability conditions are checked to derive the final set of available actions.

These actions will go through one final stage before being presented to customers: the arbitration stage. Arbitration is used to prioritize and choose the Next-Best-Actions based on what is relevant for each customer right now. This is decided by considering factors such as AI-calculated propensity, the action value, and various business levers.


Selecting actions for a customer
200
All Available Actions
80
Eligible Actions
50
Applicable Actions
10
Suitable Actions
3
Actions prioritized by Arbitration (AI)

Defining eligibility, applicability, and suitability rules

Introduction

Engagement policies are defined in Next-Best-Action Designer. Engagement policies specify the conditions under which an action or group of actions is available for a customer. These policies should be defined in the following categories: eligibility, applicability and suitability, which represent the true nature of the associated conditions.

Transcript

This demo will show you how to define engagement policy conditions such as Eligibility, Applicability, and Suitability using Next-Best-Action Designer.

U+, a retail bank, has introduced two new credit cards and would like to offer them to customers based on certain criteria.

First, all credit cards are eligible only for existing U+ customers who are at least 18 years old.

In addition, the business wants to ensure that these two new credit cards will be available for new customers who do not yet have a credit card.

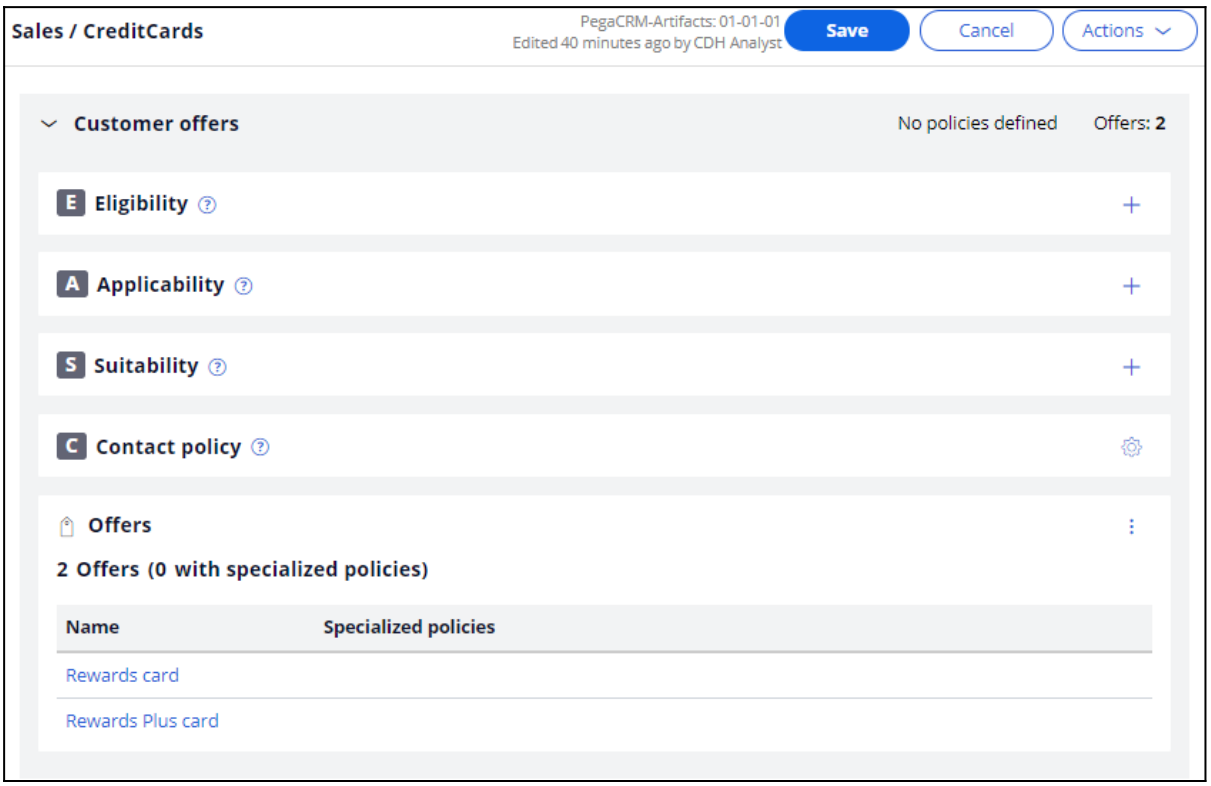
Last, the business understands that not all credit cards are suitable for everyone.

Due to the credit limits of each card, the business wants to offer the Rewards Card to customers with a credit score higher than 500 and the Rewards Plus Card to customers with a credit score higher than 750.

This is the Pega Customer Decision Hub™ portal. You define engagement policies in Next-Best-Action Designer. Engagement policies specify the conditions under which an action or group of actions is available for a customer.

Now, you will set up the engagement policies to reflect U+ bank's requirements. The engagement policies can be defined for a specific group within an issue and/or for individual actions.

Edit to configure the engagement policies. Notice that the two actions are listed under this group.

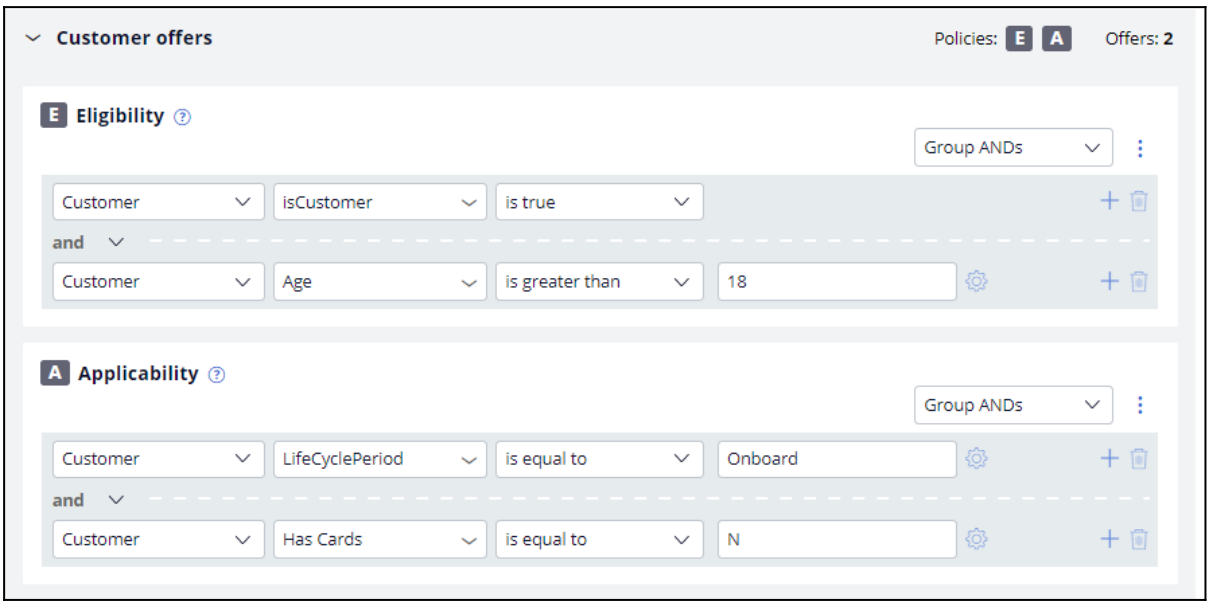


As a best practice, engagement policies should be defined in the following categories: Eligibility, Applicability and Suitability, which represent the true nature of the associated conditions.

First, define the Eligibility condition to ensure that only current customers are considered for the action, and that the customers are at least 18 years old.

Then, define the Applicability condition so that only new customers, who currently do not have a credit card, qualify for the actions. These criteria are also being defined at the group level.

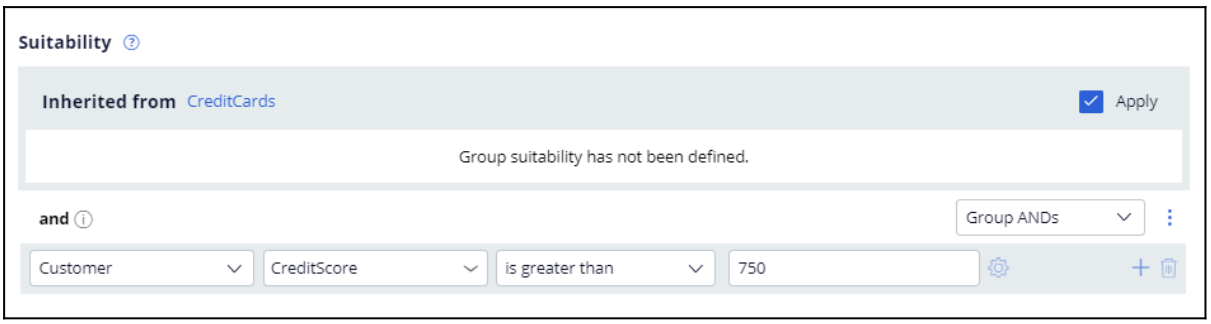
The "new customer" check is done using the **LifeCyclePeriod** property. Add a condition to check if the customer already has a credit card.



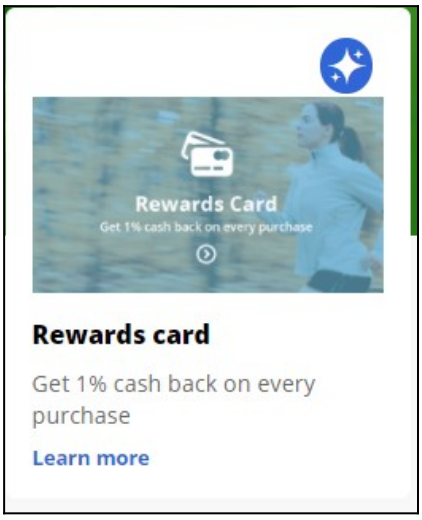
Lastly, business wants a different Suitability condition for individual cards depending on the card's limit. Since the conditions are specific to each credit card, the Suitability condition for each must be defined at the Action level.

Open the Rewards Card Action. This card comes with a certain credit limit. Therefore, U+ believes this card is only suitable for customers with a credit score higher than 500, even though customers may satisfy the Eligibility and Applicability conditions. Thus, define the Suitability condition accordingly.

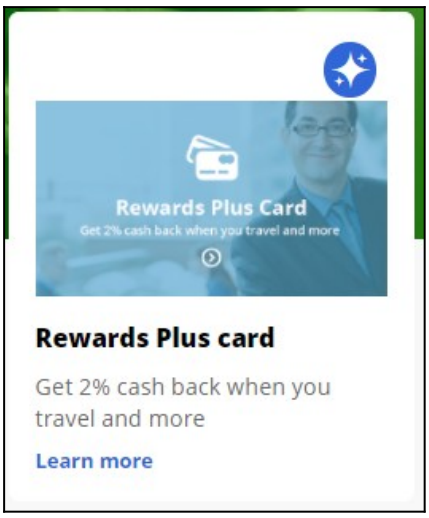
Next, open the Rewards Plus Card action. This card has an even higher credit limit than the Rewards card. Thus, this card is suitable for customers with credit score higher than 750. To complete the configuration, save the changes.



Log in as Troy, a 25-year-old Chef, who became a customer of U+ bank 3 months ago, and his credit score is 600. Notice that the Rewards Card offer is displayed, as Troy satisfies all Eligibility and Applicability conditions. Troy will only be offered this card because his credit score is higher than 500 but lower than 750.



Now, login as Barbara, a 40-year-old Engineer, who became a customer of U+ bank a month ago, and her credit score is 800. Notice that the Rewards Plus Card offer is displayed, as Barbara also satisfies all Eligibility and Applicability conditions. Barbara on the other hand will be offered both cards, as her credit score is higher than 750.



This demo has concluded. What did it show you?

- How to define engagement policy conditions in Next-Best-Action designer at the Action group level.
- How to define engagement policy conditions at the Action level.
- How to differentiate between Eligibility, Applicability and Suitability conditions.

Testing the next-best-action configuration with persona testing

Introduction

You can design persona-based tests to verify that the Next-Best-Action Strategy gives the expected results. You can design these personas according to your requirements and the strategy that you are testing to ensure you do not introduce any regressions as you define your engagement policies and arbitration.

Transcript

This demo will show you how a persona test is conducted on customer personas to evaluate the next-best-action strategy results.

U+, a retail bank, wants to verify that customers are receiving the correct offers. In other words, the bank wants to ensure that the strategy is sending offers to customers in line with their business requirements.

Personas are a representation of various customer profiles that you use to test the results of the next-best-action strategy framework.

Persona-based tests use customer personas with specific characteristics to evaluate next-best-action strategy results.

The bank decides to use Troy, Barbara, and John as personas to test the configurations.

Troy is a 25-year-old chef who became a customer of U+ bank 3 months ago, and his credit score is 600. Barbara is a 40-year-old engineer who became a customer of U+ bank a month ago, and her credit score is 800. John is a 45-year-old IT employee who became a customer of U+ bank 15 days ago, and his credit score is 600.

Persona-based tests are used to verify that the next-best-action strategy gives the expected results. On the Next-Best-Action Designer Engagement Policy tab, you can create test cases for any group.

You can create test cases for a specific group, or for all groups. Running test cases for all groups implies that you are running the next-best-action strategy for all issues and groups in your business structure.

In this case, as the bank wants to target the credit cards group, let's create a persona test case at the group level.

To configure a persona test case, select the action and treatment that you expect the test persona to receive according to your next-best-action strategy.

In this case, Troy is supposed to receive the Standard card and Rewards card actions.

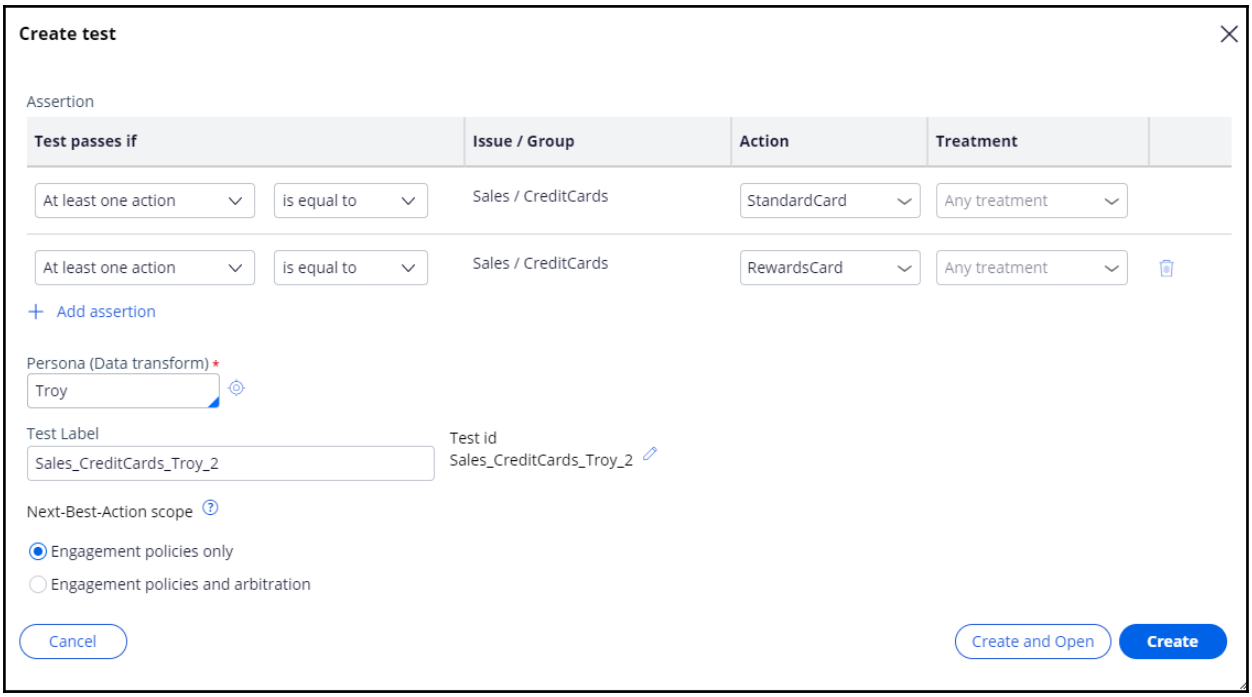
In the Persona (Data transform) field, select the persona against which you want to test the strategy. Select Troy.

In the next-best-action scope section, select whether the test should only check engagement policy configuration, or include additional elements such as constraints and arbitration.

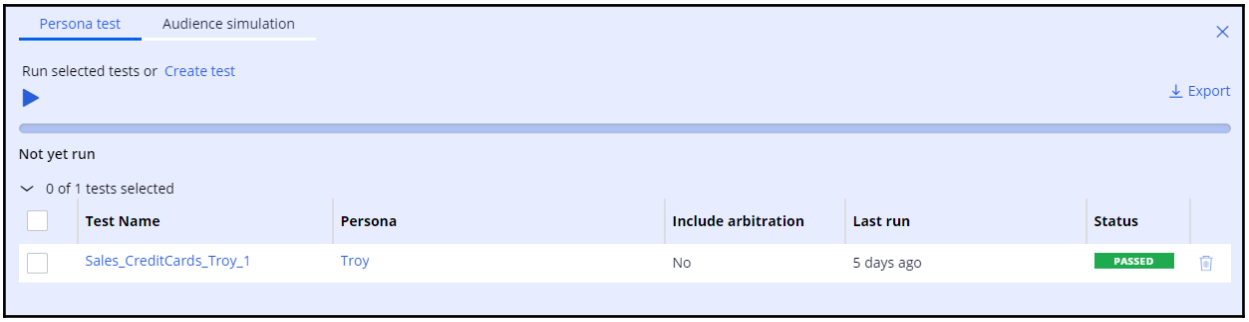
Selecting “Engagement policies only” will validate that your policy conditions are providing the desired results. This will ensure that eligibility, applicability and suitability are tested.

Selecting "Engagement policies and arbitration" will validate the effectiveness of your policies when arbitrating across all actions. The test will consider arbitration, adaptive analytics, treatment and channel processing, and constraints.

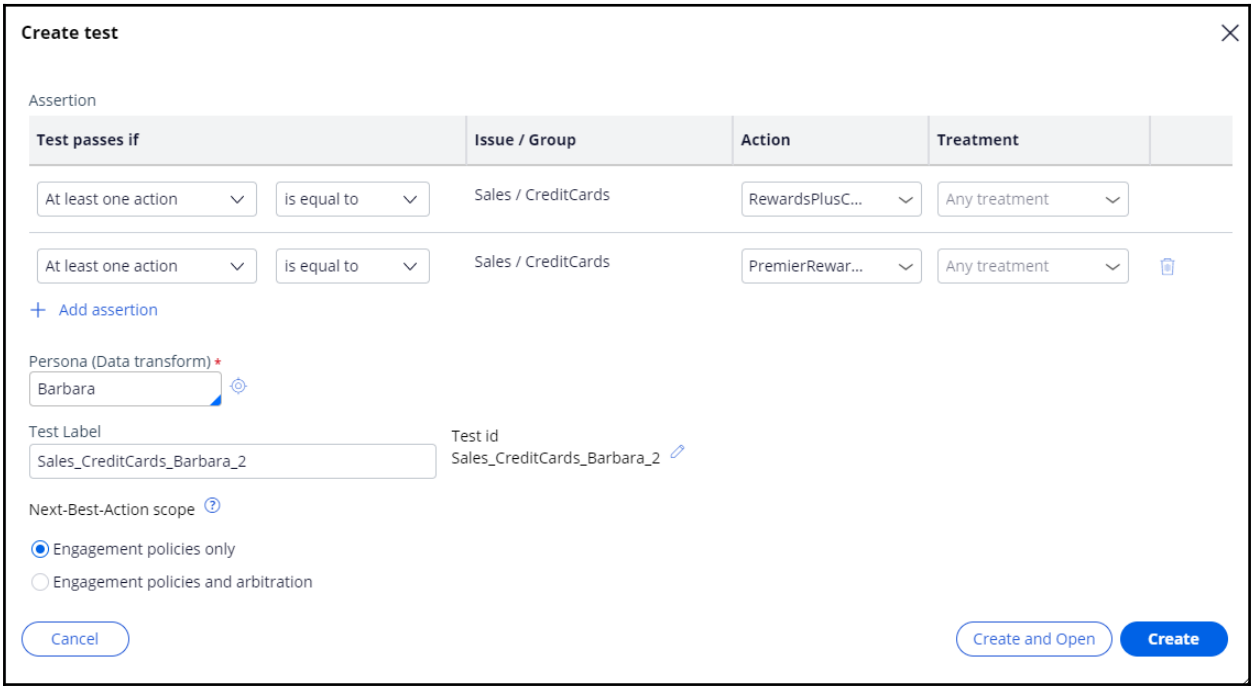
In this case, select "Engagement policies only".



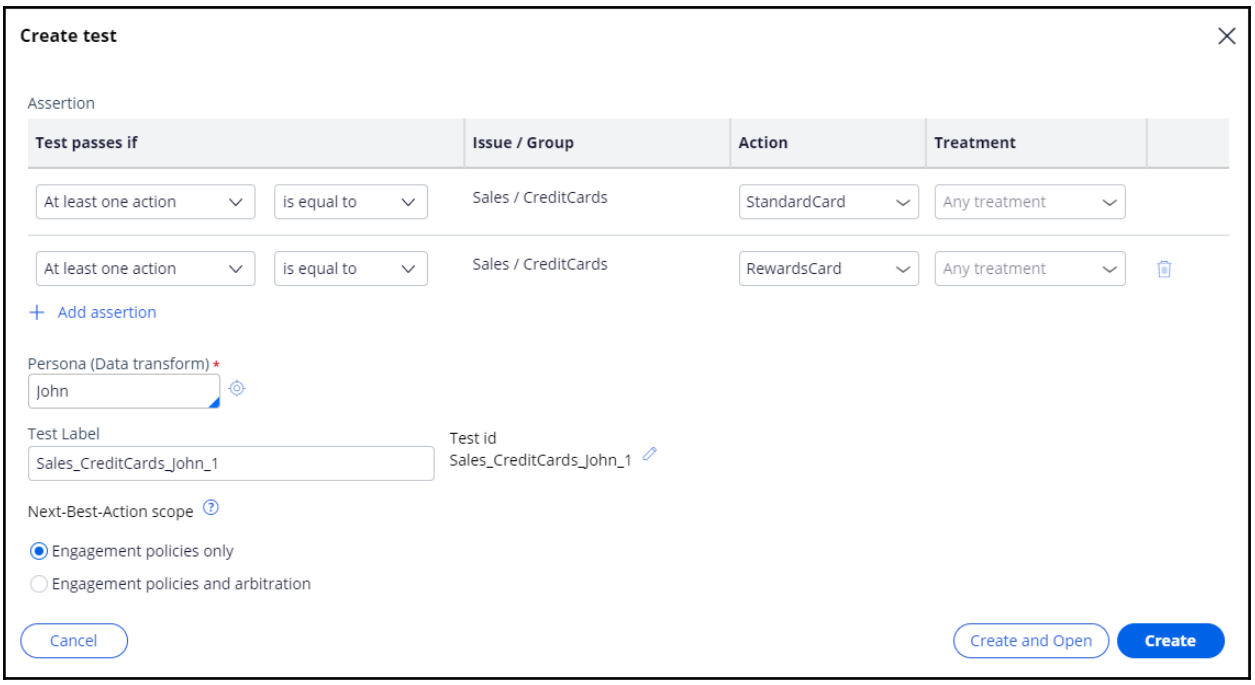
Once configured, select the test and click the **Run selected tests** icon.



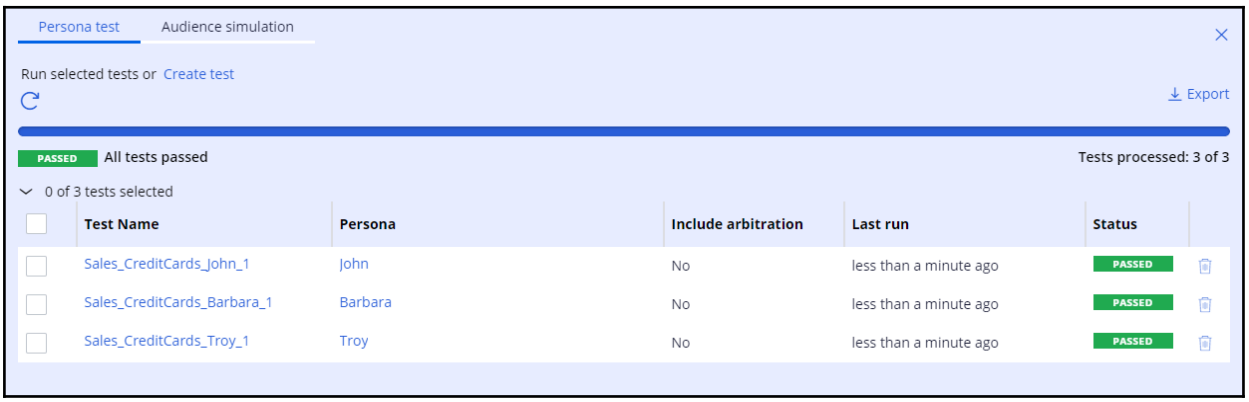
Barbara is a persona who is eligible for the Rewards plus card and the Premier rewards card. Let's create a test case for this persona.



John is a persona who is eligible for the Standard card and the Rewards card. Let's create a test case for this persona.



Run the test to confirm he passes the test.



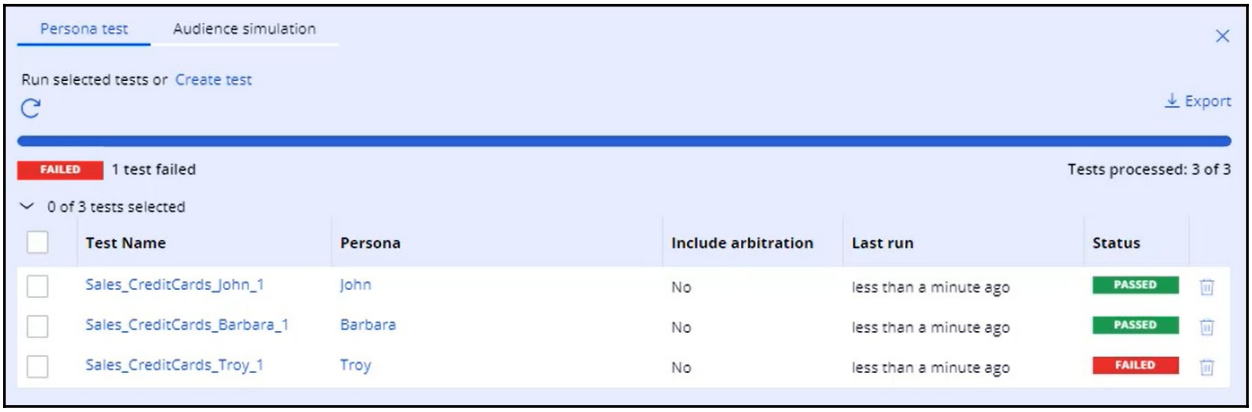
The bank has now decided to offer the Standard card to customers who have an average balance greater than $2000.

So, let's see how this engagement policy change affects these test results. To define an engagement policy, click Standard card.

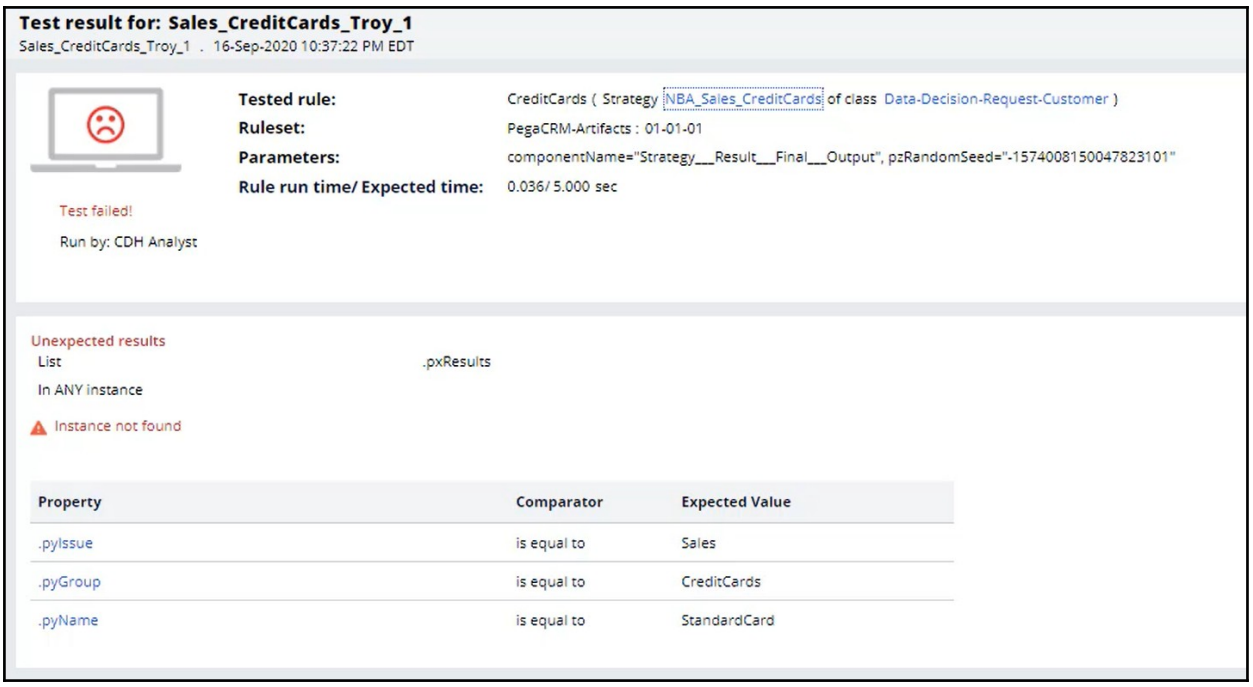
Define an Applicability condition so that only customers who have a minimum average balance of $2000 qualify for the actions.

Run all the tests to see how this engagement policy configuration affects the test cases.

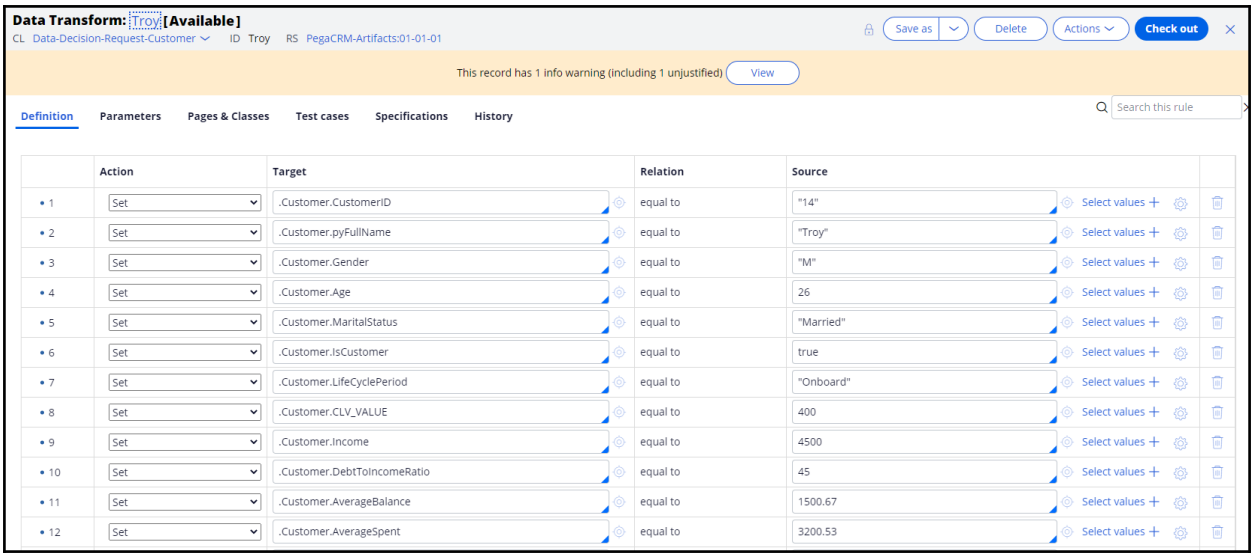
Observe that Troy fails the test. This means he does not satisfy all the existing engagement policies. Analyze the results to see why the test did not give the expected outcome.



Per the report, he is not eligible for the Standard card and, thus, this test failed.

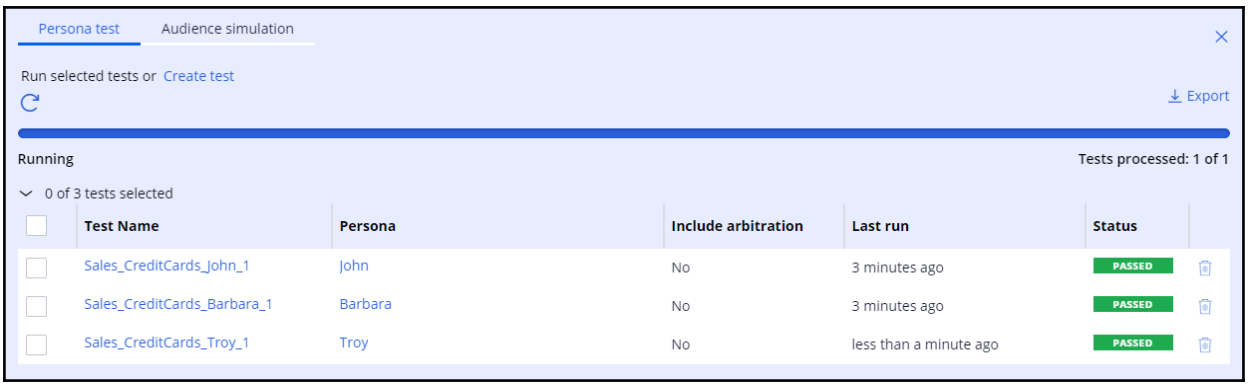


Troy's average balance is 1500, which is less than the defined applicability condition. Whereas, John's average balance is 3000 and Barbara's average balance is 3500, which are more than the defined applicability condition.



The Troy persona failed the test, but John and Barbara passed it.

Let's edit the test for Troy's persona to delete the Standard card assertion and run the test So, you can design all these personas according to the business requirements and test them every time an engagement policy has changed.



You can also export the results into an excel sheet for further analysis.

This demo has concluded. What did it show you?

- How to create persona test cases.
- How engagement policy changes affect the persona test results.
- How to edit persona test cases.

Avoiding overexposure of actions

Description

Learn about contact policies and how they are used in Pega Customer Decision Hub. Gain experience defining contact policy rules to suppress actions after a specific number of outcomes.

Learning objectives

- Describe contact policy requirements
- Explain how to define contact policy rules to suppress a single action or group of actions for a limited time period

Contact policies

Understanding contact policy requirements

Too many contact attempts over a short period of time can have a negative impact on a customer's attitude toward further actions by your company. To maximize the lifetime value of every customer relationship, organizations must prevent outreach fatigue by optimizing the number of actions taken.

In the Pega Customer Decision Hub, contact policies allow you to suppress actions after a specific number of outcomes.

Suppressing or pausing an action prevents oversaturation by limiting the number of times a customer is exposed to the same action.

Defining contact policies

Contact policies determine when and for how long an Action or group of Actions should be shown to a customer. Contact policies track responses to Actions over a specific period of time, allowing you to implement rules such as the following:

- Do not show an ad to a customer for two weeks if the customer ignores the ad five times in a one-week timeframe.

Note: If outcomes are tracked for an individual action, then the action is not shown once the suppression criteria are met.

- Do not show a group of ads for six months if a customer clicks on any ad in the group 3 times over a period of 30 days.

Note: If outcomes are tracked for all actions in the group, then all of these actions are not shown once the suppression criteria are met.

An Interaction History Summary rule is used to determine the number of impressions and clicks generated by a customer over a period of time. The default time periods are 7 and 30

days. There might be business requirements to track a customer's response to an offer over different time periods, for example, 14 days.

You can add more tracking periods by creating a new Interaction History Summary rule for the required time period and then updating the part of the Next-Best-Action strategy that references it.

Defining action suppression rules

Introduction

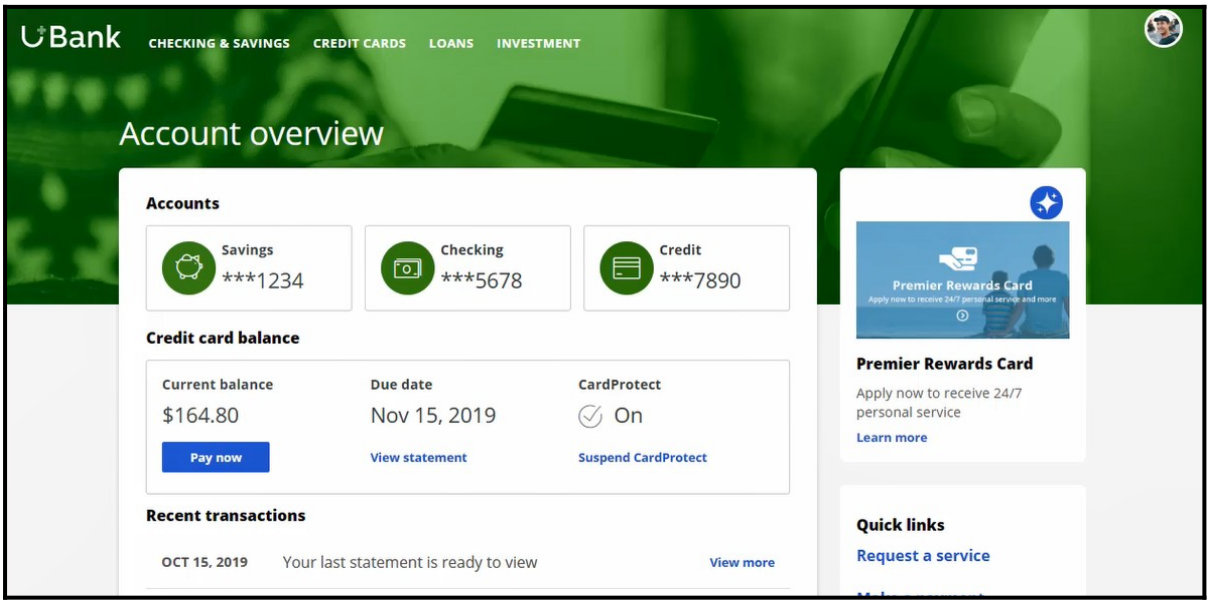
Suppression rules determine when and for how long an action or group of actions should not be shown to a customer. These suppression rules pust an action on hold after a specific number of outcomes are recorded for some or all channels.

Transcript

This demo will show you how to suppress a single action or group of actions for a limited time period.

U+, a retail bank, currently displays various credit card offers to each customer who logs in to the website.

For example, every time Troy logs in to his accounts page, a credit card offer is shown. Sometimes the same offer is shown multiple times.



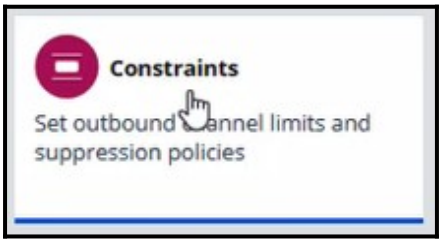
For a limited time period, the bank wants to automatically suppress offers that are shown or clicked too often.

In this scenario, the bank has two requirements. First, do not show a credit card for ten days if the card was shown three times in the last seven days.

Second, do not show any credit cards for ten days if a user has clicked on a credit card five times in the last seven days.

Contact policies are used to implement these business requirements. You create contact policies in Next-Best-Action Designer.

On the Constraints tab, you can define the suppression rules by creating contact policy rules.



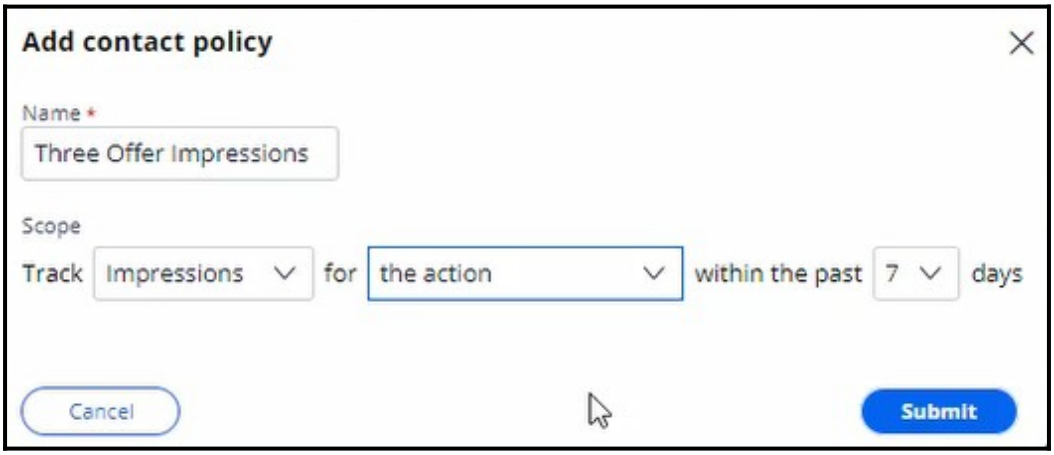
For the first requirement, showing a credit card a maximum of three times, configure a contact policy to track Impressions at the Action level.

Provide a name for the contact policy.

Then select the type of outcome that will be tracked by the contact policy, in this case Impressions.

You can specify whether the responses are tracked for one specific action, or for all actions in the group. Track the first requirement at the Action level, since you want to show one specific card a maximum of three times.

You can select the time period over which the responses should be tracked. In this case, responses should be tracked over a period of seven days.



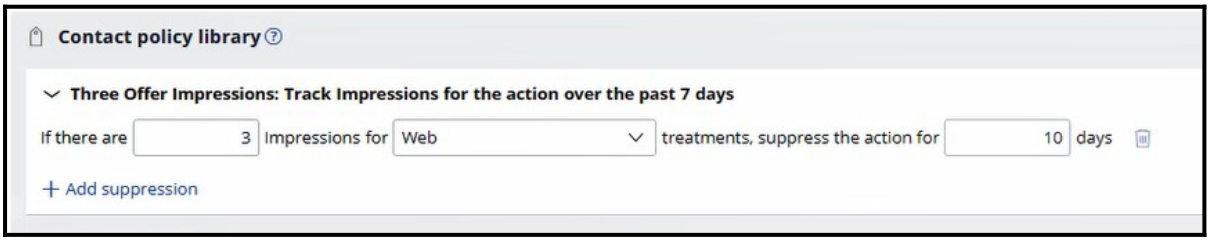
The newly configured contact policy has been added.

The first business requirement is to suppress the action for ten days if there are three impressions for the web treatment, so fill in the details accordingly.

Enter the number of responses required to fulfill the suppression criteria.

Select the channel for which the responses are tracked. Note that if you want to track impressions across multiple channels, you can select **Any**.

Enter the number of days for which an action should be paused after the suppression criteria are met.

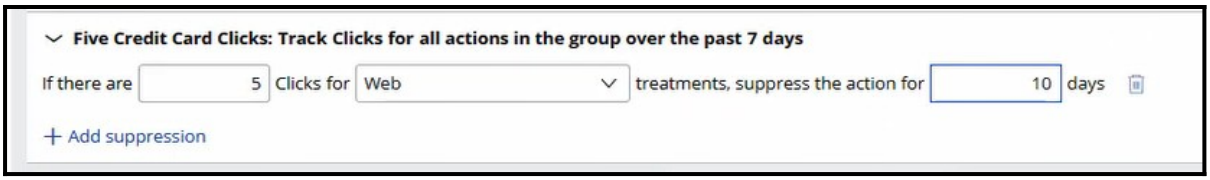


The next business requirement is to suppress the entire group of actions if there are five clicks for web treatments.

The first contact policy is configured to track Impressions, so add another contact policy.

For this requirement you will be tracking Clicks for all actions in the group. This because you want to hide all credit cards if there are five clicks on any one credit card.

Once the contact policy is created, fill in the suppression rule details. If there are five clicks on web treatments, suppress the action for ten days.



Save the changes.

The contact policy rules are reusable as policy rules across all business issues and groups.

As the bank wants to suppress credit card offers, open the CreditCards group.

Add the contact policy rules you just created.

With that, all the necessary configuration for this scenario is complete. Save the changes.

When customer Troy logs in to his accounts page, the Premier Rewards Card offer is displayed.

After showing him this offer three times, it is automatically suppressed, and a different credit card offer is shown.

When customer Barbara logs in to her accounts page, a credit card offer is displayed.

After clicking on any credit card offer five times, the credit card offers are not shown again.

This demo has concluded. What did it show you?

- How to define contact policy rules to suppress a single action or group of actions.

Arbitrating between actions

Description

After applying engagement policy rules, a customer may still qualify for more than one action. Learn how every Next-Best-Action weighs customer needs against business objectives to optimize decisions based on priorities set by the business.

Learning Objectives

- Describe what action arbitration is and how it works
- Explain how customer needs and business objectives are considered during arbitration
- Prioritize actions based on AI
- Prioritize actions based on AI & business levers

Action arbitration

Introduction

Pega Customer Decision Hub combines analytics, business rules, customer data, and data collected during each customer interaction to create a set of actionable insights that it uses to make intelligent decisions. Arbitration aims to balance customer relevance with business priorities by weighing numerical values for the following factors: propensity, context weighting, action value, and business levers. Learn to create a simple formula for arriving at a prioritization value, which is used to select the top actions.

Transcript

This video explains the concept of action arbitration.

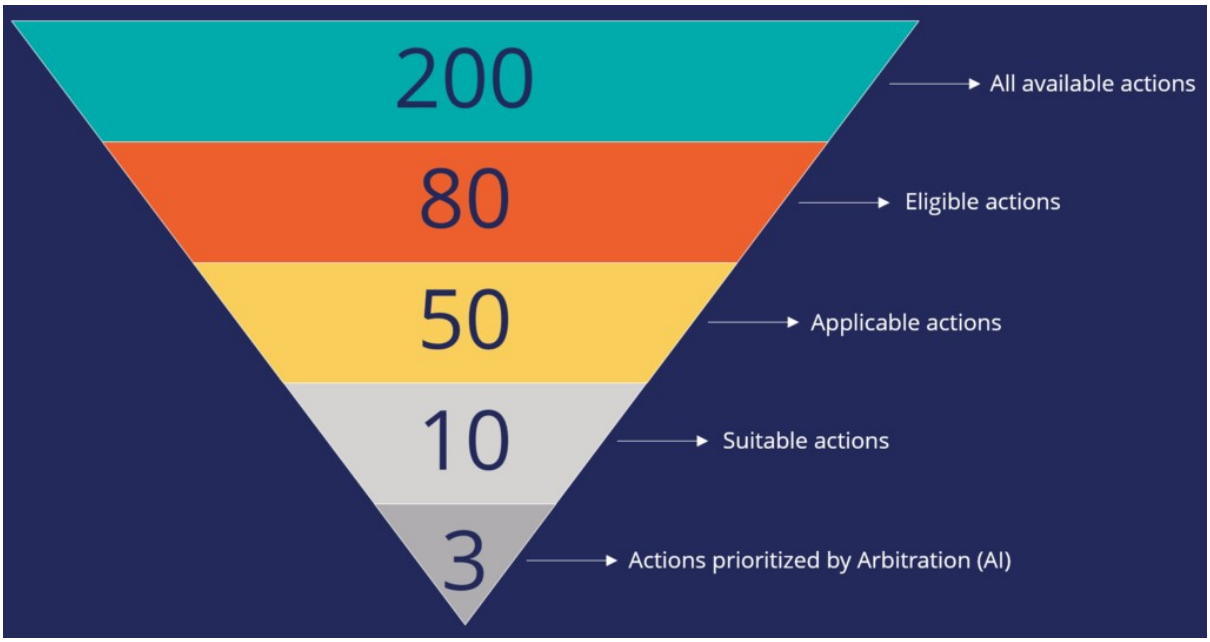
Pega Customer Decision Hub™ combines analytics, business rules, customer data, and data collected during each customer interaction to create a set of actionable insights that it uses to make intelligent decisions. These decisions are known as Next-Best-Action.

Every Next-Best-Action weighs customer needs against business objectives to optimize decisions based on priorities set by the business manager.

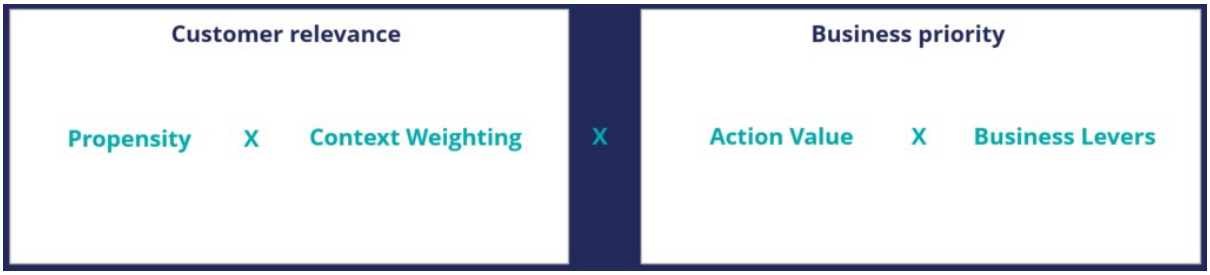
U+ Bank, a retail bank, has several actions for its customers and has configured engagement policies to suit both customer needs and business objectives.

In this scenario, a marketer for U+ has designed 200 actions that can be presented to customers. To select the Next-Best-Actions from these, Pega Customer Decision Hub first checks the eligibility conditions and filters the actions. Then, the applicability conditions are run to filter it further. Next, Customer Decision Hub checks the suitability conditions to derive the final set of available actions.

These actions move through one final stage before being presented to customers: the arbitration stage. Arbitration is used to prioritize and choose the best actions based on what is relevant for the customer right now.



Arbitration aims to balance customer relevance with business priorities. The factors weighed are **Propensity**, **Context Weighting**, **Action Value**, and **Business Levers**, each represented by numerical values. A simple formula is used to arrive at a prioritization value, which is used to select the top actions. The number of top actions selected depends on the channel of interaction. For example, the top three actions, plus two tiles and one hero treatment, can be selected for display on a bank's website.



Propensity is the likelihood of a customer responding positively to an action; this is calculated by AI. For example, the higher the likelihood of a customer accepting an offer, the higher the Propensity value for that offer.

Context Weighting allows Pega Customer Decision Hub to consider the situational context for each action. For example, if a customer contacts the bank to close their account, the highest-priority action is to ensure that the customer is retained. The priority of an action is increased by a specified value when the context is detected.

Action Value enables you to assign a financial value to an action and prioritize high-value actions over low-value ones. This value is typically normalized across Issues and Groups. For example, an unlimited data plan is more profitable than a limited data plan. So, in a situation where a customer is eligible for both plans, the unlimited plan has higher priority.

Business Levers allow the business to assert some level of control over the prioritization of actions defined within the system. Levers are used to manually nudge Customer Decision Hub toward Next-Best-Actions based on external factors. For example, the recommended Next- Best-Action might be to offer a credit card to a customer when they visit the home page. But to meet a business goal, the Mortgage Line of Business favors a mortgage offer even if that offer is ranked a little lower on the list of possible actions.

Consider an example where three actions are selected for arbitration. At the moment, only the Propensity is used for prioritization.

Rank	Issues	Groups	Actions	Propensity	Context weighting	Action value	Business levers	Priority
	Sales	Credit cards	Gold Card	0.5	1	1	1	0.5
	Retention	Proactive	10% discount	0.55	1	1	1	0.55
	Service	Administrative	Address change	0.4	1	1	1	0.4

Action arbitration with propensity before prioritization

The result of the arbitration is that the top action is the one with the highest Propensity.

Rank	Issues	Groups	Actions	Propensity	Context weighting	Action value	Business levers	Priority
1	Retention	Proactive	10% discount	0.55	1	1	1	0.55
2	Sales	Credit cards	Gold Card	0.5	1	1	1	0.5
3	Service	Administrative	Address change	0.4	1	1	1	0.4

Action arbitration with propensity after prioritization

Examine what happens when Context Weighting together with Propensity are considered for arbitration. For example, if the intent of a customer calling customer service is to change their address, the Context Weight of a Service action increases.

Rank	Issues	Groups	Actions	Propensity	Context weighting	Action value	Business levers	Priority
1	Retention	Proactive	10% discount	0.55	1	1	1	
2	Sales	Credit cards	Gold Card	0.5	1	1	1	
3	Service	Administrative	Address change	0.4	2	1	1	

Action arbitration with context weight before prioritization

As a result, the Arbitration caters to the current need of the customer and presents a Service action as the top action for the customer. Thus, the Arbitration caters to the current need of the customer and presents a Service action as the top action for the customer.

Rank	Issues	Groups	Actions	Propensity	Context weighting	Action value	Business levers	Priority
1	Service	Administrative	Address change	0.4	2	1	1	0.8
2	Retention	Proactive	10% discount	0.55	1	1	1	0.55
3	Sales	Credit cards	Gold Card	0.5	1	1	1	0.5

Action arbitration with context weight after prioritization

Consider another scenario in which a customer is eligible for two credit cards and two other actions. Now, consider that the Action Value is also used in arbitration when prioritizing. In this case, the Platinum Card is assigned a higher value by the business than the Gold Card.

Rank	Issues	Groups	Actions	Propensity	Context weighting	Action value	Business levers	Priority
1	Sales	Credit cards	Gold Card	0.6	1	1	1	
2	Sales	Credit cards	Platinum Card	0.55	1	2	1	
3	Retention	Proactive	10% discount	0.2	1	1	1	
4	Service	Administrative	Address change	0.1	1	1	1	

Action arbitration with action value before prioritization

Thus, the arbitration selects the Platinum Card as the top action.

Rank	Issues	Groups	Actions	Propensity	Context weighting	Action value	Business levers	Priority
1	Sales	Credit cards	Platinum Card	0.55	1	2	1	1.1
2	Sales	Credit cards	Gold Card	0.6	1	1	1	0.6
3	Retention	Proactive	10% discount	0.2	1	1	1	0.2
4	Service	Administrative	Address change	0.1	1	1	1	0.1

Action arbitration with action value after prioritization

Finally, consider an example in which all four parameters are used for arbitration. In this case, U+ Bank wants to promote two new checking account offers under the Sales issue. The bank sets a higher Business Lever value for the Checking Accounts actions.

Rank	Issues	Groups	Actions	Propensity	Context weighting	Action value	Business levers	Priority
1	Sales	Credit cards	Gold Card	0.6	1	1	1	
2	Sales	Credit cards	Platinum Card	0.55	1	1	1	
3	Sales	Checking Accounts	Premium Checking	0.55	1	1	2	
4	Sales	Checking Accounts	Student Checking	0.5	1	1	2	
5	Retention	Proactive	10% discount	0.2	1	1	1	
6	Service	Administrative	Address change	0.1	1	1	1	

Action arbitration with business levers before prioritization

Although the Propensity of the Checking Accounts actions is low, they are selected as the top actions due to their high Lever values.

Rank	Issues	Groups	Actions	Propensity	Context weighting	Action value	Business levers	Priority
1	Sales	Checking Accounts	Premium Checking	0.55	1	1	2	1.1
2	Sales	Checking Accounts	Student Checking	0.5	1	1	2	1
3	Sales	Credit cards	Gold Card	0.6	1	1	1	0.6
4	Sales	Credit cards	Platinum Card	0.55	1	1	1	0.55
5	Retention	Proactive	10% discount	0.2	1	1	1	0.2
6	Service	Administrative	Address change	0.1	1	1	1	0.1

Action arbitration with business levers after prioritization

Action prioritization with AI

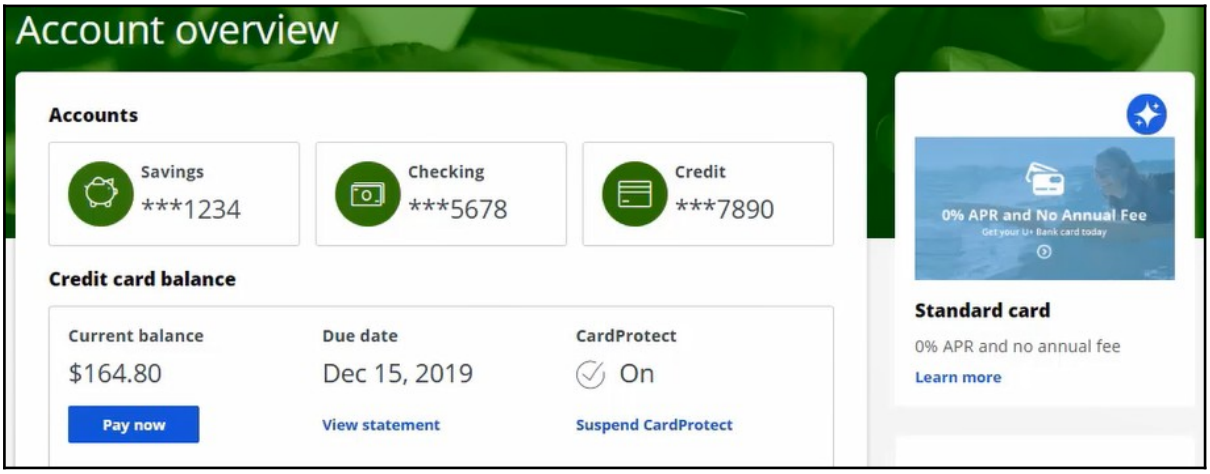
Introduction

Explore how AI-based arbitration works and how AI predicts customer behavior. Arbitration aims to balance customer relevance with business priorities. To select the top actions, a formula is used to arrive at a prioritization value. The formula uses the propensity value, which is calculated using AI. Propensity is the predicted likelihood of positive behavior, such as the likelihood of a customer accepting an offer.

Transcript

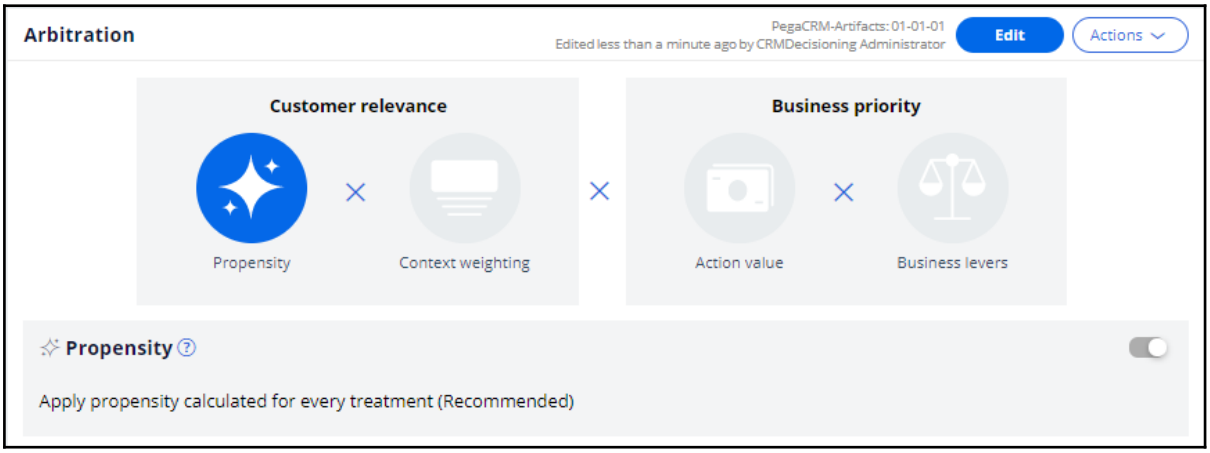
This video will explore how AI-based arbitration works and explain how AI predicts customer behavior.

U+, a retail bank, uses the Pega Customer Decision Hub™, to display marketing offers to customers on its website. The bank would like to display more relevant offers to customers based on their behavior.
Troy, a customer, qualifies for two credit card offers. When he logs into the bank's website, he sees the top offer for him, the **Standard Card.**



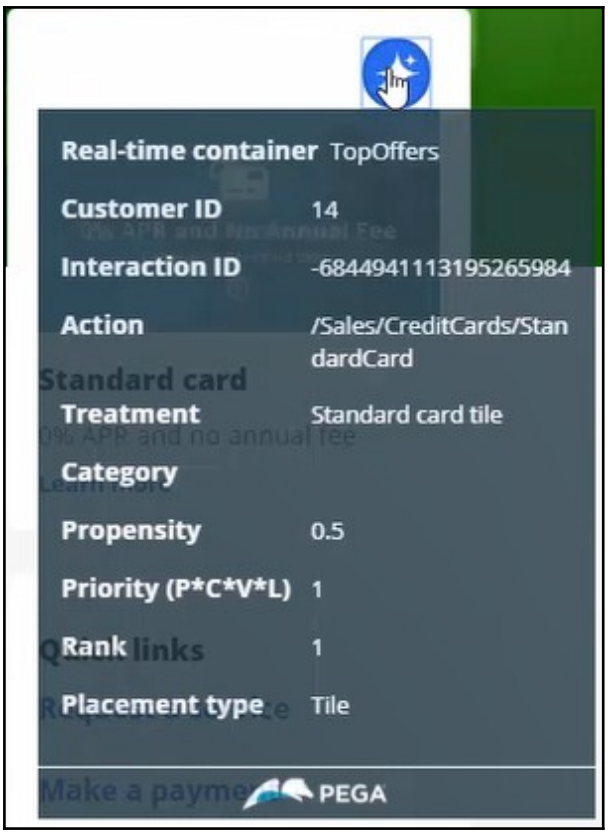
These are the Arbitration settings defined in Pega Customer Decision Hub's Next-Best-Action Designer. Arbitration aims to balance customer relevance with business priorities. To achieve this balance, Propensity (P), Context weighting (C), Action value (V), and Business levers (L) are represented by numerical values and plugged into a simple formula, P * C * V * L. This formula is used to arrive at a prioritization value, which is used to select the top actions.

Notice that only Propensity is currently enabled. Propensity is the predicted likelihood of positive behavior, such as the likelihood of a customer accepting an offer. The value of Propensity is calculated using AI.

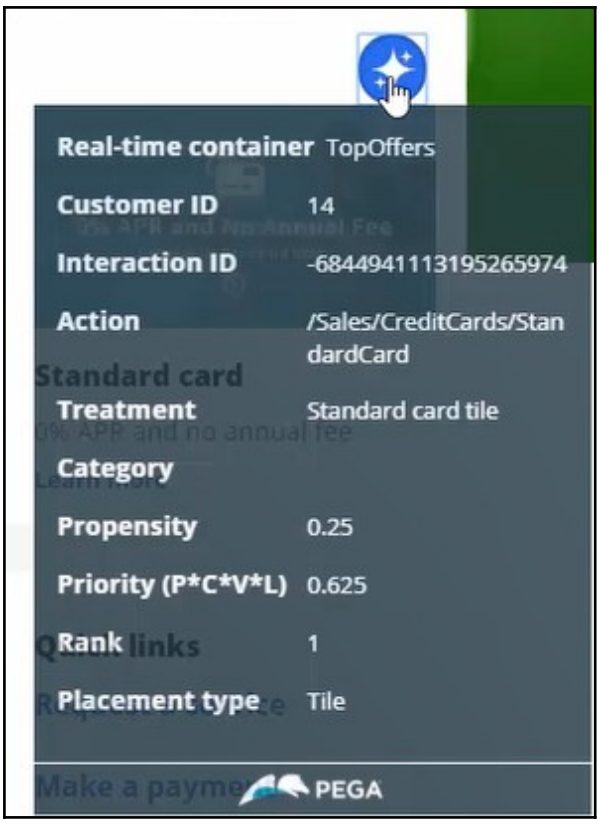


Note the Propensity and Priority values of the **Standard Card**. The Propensity for every action starts at 0.5 or 50%, the same as the flip of a coin. This is because in the beginning, the AI has no past customer behavior on which to base its predictions. Propensity is one of the factors used to arbitrate between relevant offers and select the top offer for a customer.

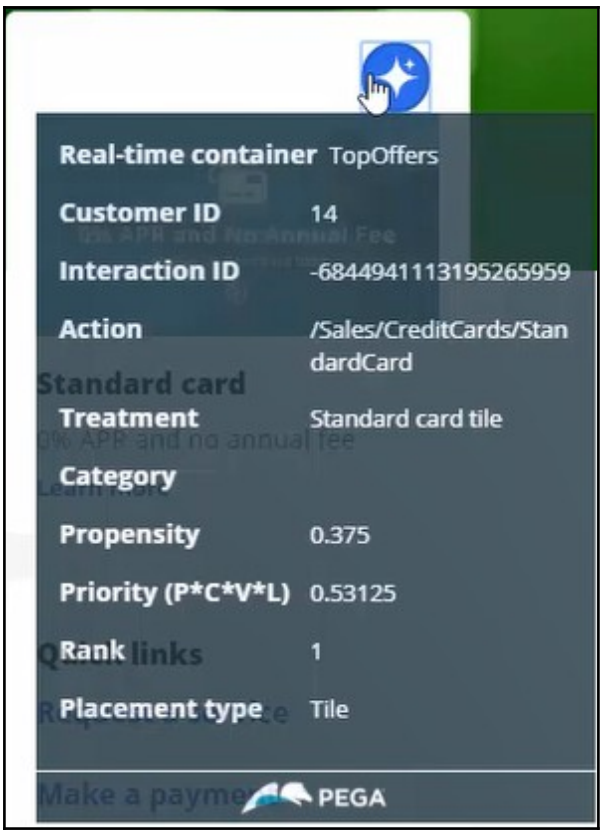
Though only the Propensity is enabled for arbitration, the value of Priority, which is currently based on Propensity only, does not match the Propensity value. This difference occurs because the Priority calculation does not use the raw model Propensity value directly. Instead, the calculation uses an adjusted Propensity. The adjusted Propensity value helps to equalize the sudden changes in Propensity values that the AI calculates during the initial phase of its learning when it has yet to gather enough customer behavior data to make accurate predictions.



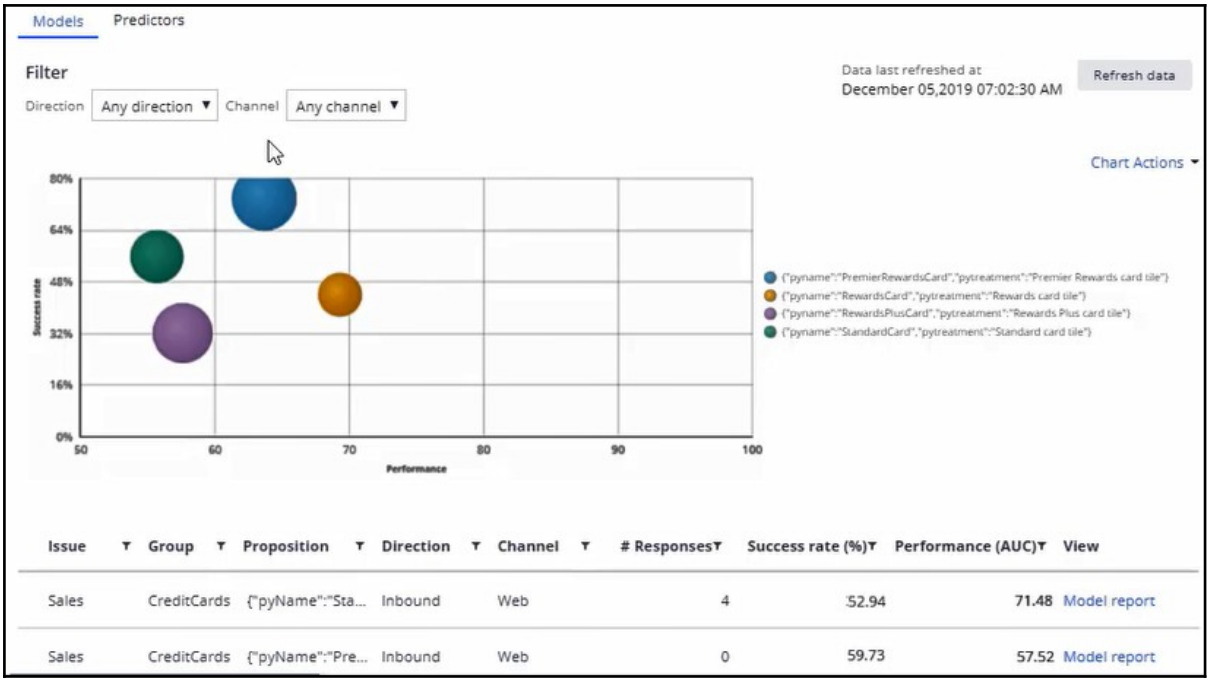
If Troy doesn't click on the current offer this time, a different offer will be shown the next time he visits the website. The next offer Troy is eligible for, the Rewards Card, is then selected for display. If Troy ignores this card as well, by not clicking on it, then the next time he logs in, the Standard Card offer will be displayed again. Why this behavior? First, Troy only qualifies for these two credit card offers. Second, the AI model behind these offers is configured to treat an impression not followed by a click as a negative behavior. In other words, when a customer is presented with an offer but doesn't click on it, the AI records this as a negative behavior. As a result, the Propensity, and therefore the Priority, of the not-clicked-on offer decreases. Notice that the Propensity value of the **Standard Card** offer dropped from 0.5 to 0.25.



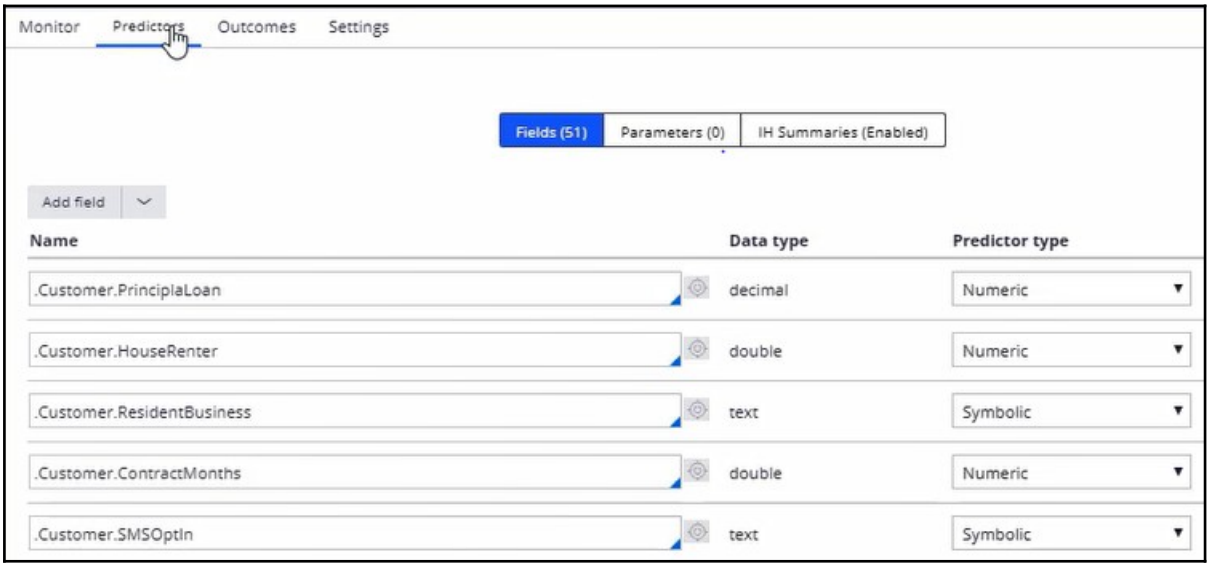
Now, if Troy clicks on the 'Learn more' link for the **Standard Card** offer, a positive response is recorded, and thus the Propensity value of the **Standard Card** increases.



The Customer Decision Hub is configured to calculate the Propensity for each Treatment. To understand how this works, let's examine the AI behind a Treatment. This pop-up window provides a summary of the AI behind this Treatment. In the Pega Customer Decision Hub, the AI that determines the Propensity for positive behavior towards an action or Treatment is called an adaptive model. From here, you can navigate to the adaptive model itself.



An adaptive model is a self-learning predictive model that uses machine learning to calculate Propensity scores. It automatically determines the factors that help in predicting customer behavior. These predictors can include a customer's demographic details, product and service usage, past interactions with the bank, and even contextual information such as the current channel of interaction.

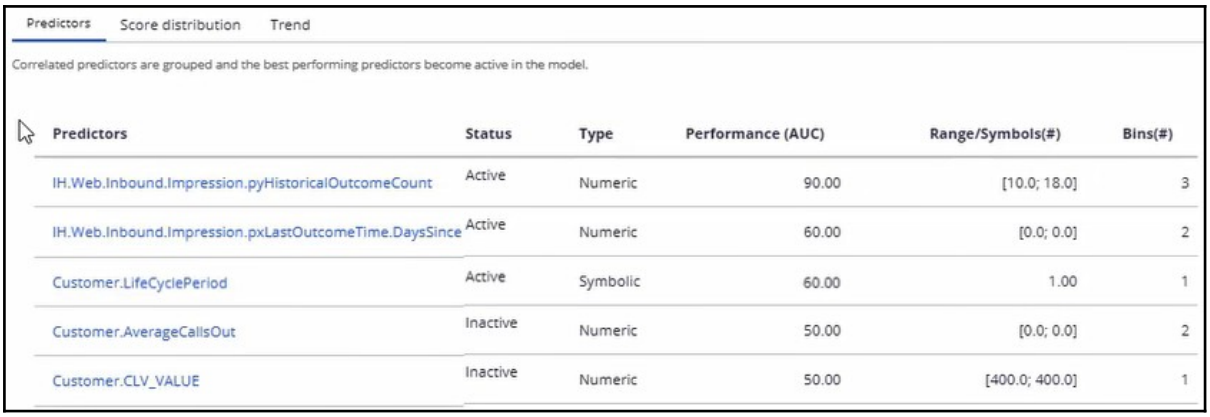


This adaptive model considers an impression not followed by a click, when a marketing offer is displayed on a website, a negative behavior. It considers a Click a positive behavior.

Therefore, when a customer sees an offer message but doesn't click on it, the model records a negative behavior.

The monitoring tab provides an overview of the model's performance. The business can use this information to assess the contribution of the model's predictions with respect to the success of the actions.

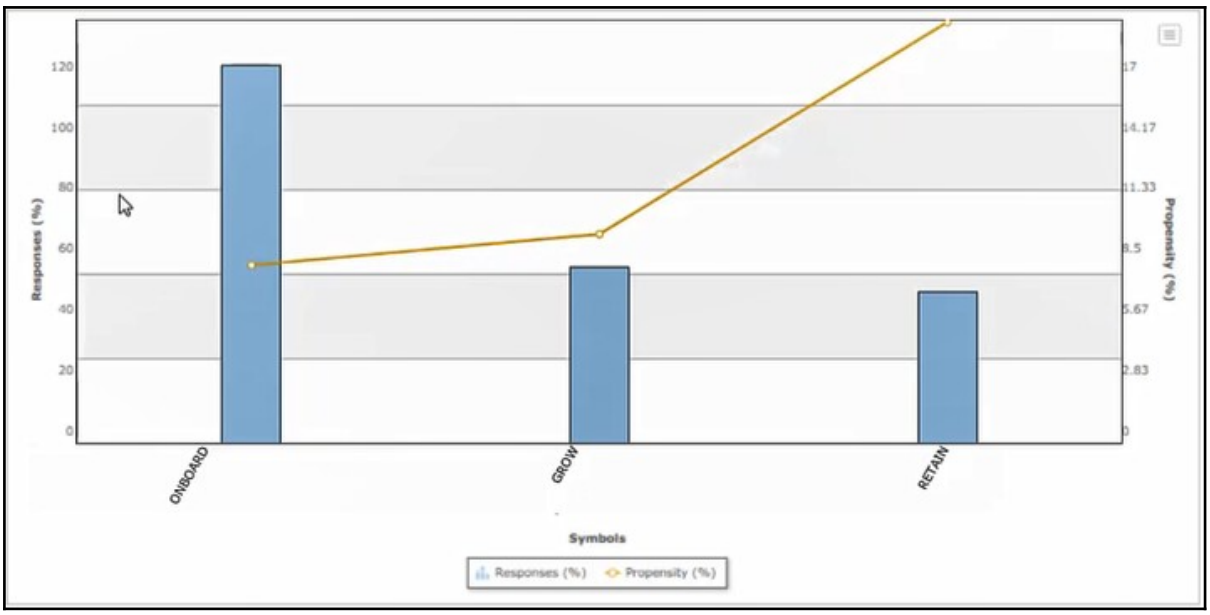
The model report provides more insight into the AI model itself. This AI model is automatically generated by the system, and it adapts its prediction algorithm in real-time, based on incoming customer responses. The report shows more information about the predictors, such as how they are grouped and details a data scientist can use to analyze the current health of the model and diagnose any potential problems.



Predictors	Status	Type	Performance (AUC)	Range/Symbols(#)	Bins(#)
IH.Web.Inbound.Impression.pyHistoricalOutcomeCount	Active	Numeric	90.00	[10.0; 18.0]	3
IH.Web.Inbound.Impression.pxLastOutcomeTime.DaysSince	Active	Numeric	60.00	[0.0; 0.0]	2
Customer.LifeCyclePeriod	Active	Symbolic	60.00	1.00	1
Customer.AverageCallsOut	Inactive	Numeric	50.00	[0.0; 0.0]	2
Customer.CLV_VALUE	Inactive	Numeric	50.00	[400.0; 400.0]	1

In the Predictor report, you can examine the performance of individual predictors. Let's examine the LifeCyclePeriod predictor.

This a predictor of type Symbolic. The individual Predictor report shows that a customer whose lifecycle stage is RETAIN is most likely to accept the Standard Card action in the web channel.



The behavior of one customer can influence the Propensity calculation for other customers with a similar profile. For example, when Robert, a customer with a profile similar to Troy, logs in, he is shown the same offer as Troy. The same AI model is behind the Treatments for both customers, so Robert's action will influence Troy's Propensity score.

This demo has concluded. What did it show you?

- How AI uses customer behavior to calculate Propensity.
- How Propensity smoothing is used to help jump-start the process of AI learning.
- How the Prioritization value is calculated using the (P*C*V*L) formula.
- What adaptive models are and how to monitor them.

Prioritizing actions with business levers

Introduction

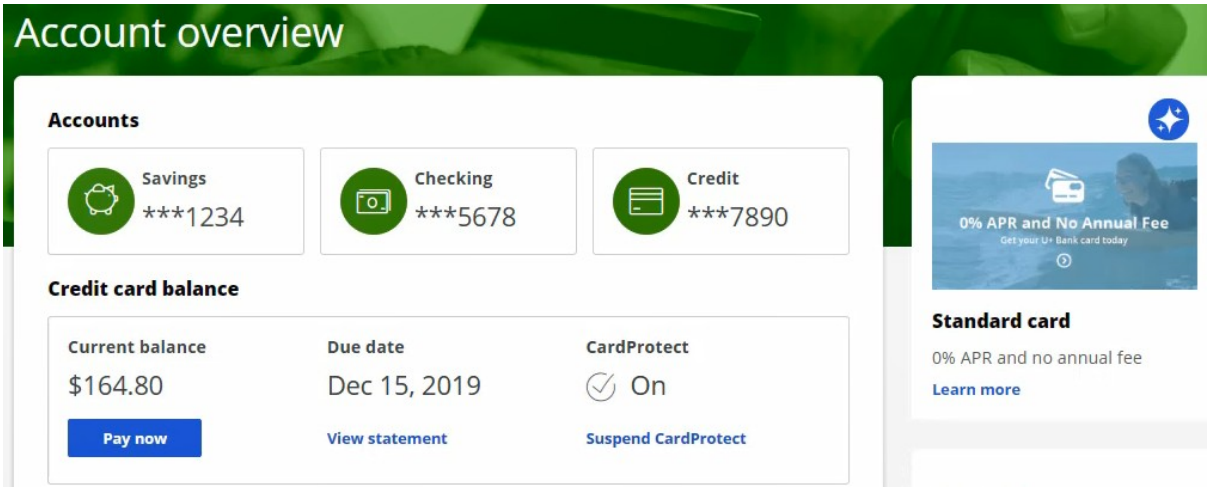
Often, due to an internal ad-hoc priority, the business would like to boost the chance of certain actions being selected. To achieve this, they would like to present more relevant offers to customers based not only on their behavior but also on business priorities. Learn how to include business requirements in an action prioritization calculation to boost the chance of an action being selected.

Transcript

This video will show you how to include business requirements in an action prioritization calculation to boost the chances of an action being selected.

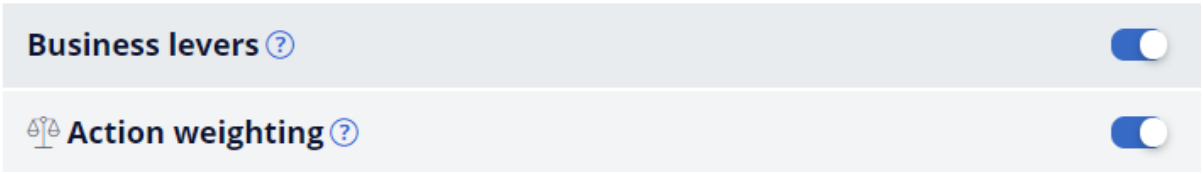
U+, a retail bank, noticed that one of the offers, the Rewards card offer, was not presented frequently enough due to its low propensity because customers ignored it during the initial launch.

For example, Troy, a customer, qualifies for two credit card offers – the Standard Card and the Rewards Card. When he logs in to the bank's website, he sees the top offer for him, Standard Card.

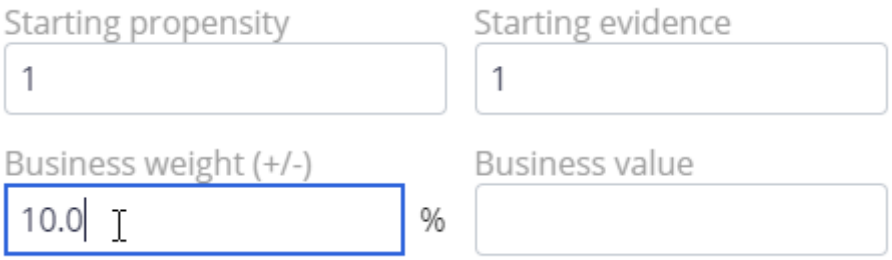


Now, due to an internal ad-hoc priority, the bank wants to boost the chances of the Rewards Card being selected as the top offer. That is, the bank would like to present more relevant offers to customers based on not only their behavior but also on business priorities.

To implement this requirement, you must first enable the Action Weighting, a Business Lever, in Next-Best-Action Designer's Arbitration equation. This ensures that an action's business weight is used in the priority value calculation.

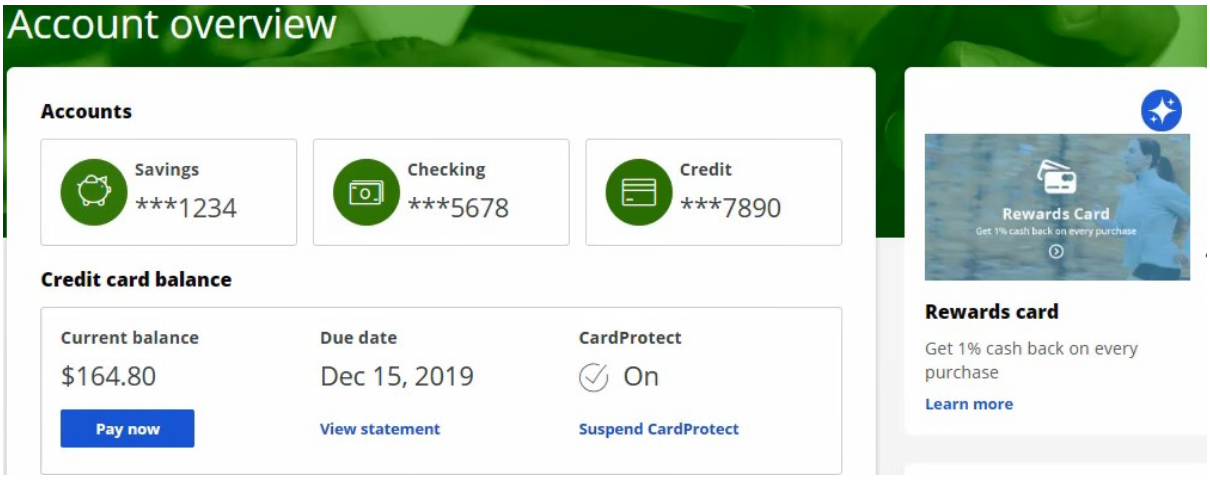


In this case, the bank wants to boost the Rewards Card. So, open the Rewards Card offer. Edit the offer to set a business weight, a value in percentage, that is required to boost the offer. In this case, U+ wants to increase the changes of this action selected by 10%.



Save the offer for the changes to take effect.

Now, when Troy logs into the website, he will see that Rewards card is the top offer.



This demo has concluded. What did it show you?

- How to include business requirements in action prioritization calculation.
- How to boost an action using business weight.