Communications Customer Analytical Data Model Guide

This guide provides information on the customer analytical data model for communications, which Pega provides in the form of the extended Customer Analytics Record (CAR). By using the xCAR, you can accelerate your implementation of Pega Customer Decision Hub for the communications industry.

The guide is intended mainly for marketing analysts, but also for system architects and data architects.

The xCAR is a multilevel, structured record of the customer data in a format optimized for performance, real-time analytics, and one-to-one marketing. xCAR provides for:

- Faster, more accurate business decisions
- Customer offers that are more attractive and better tailored to their needs

An xCAR record derives from a CAR. For more information, see Extending the data model in Pega Customer Decision Hub.

The further parts of this guide provide an overview of how the application retrieves and uses data from your internal and external systems, and of data storage and transformation in xCAR records in the application.

Extending the data model in Pega Customer Decision Hub

Speed up your implementation process by extending the Customer Analytics Record (CAR) data model to suit your business needs.

The first part of any project is planning and analyzing your data. Pega Customer Decision Hub provides the data attributes for you in the form of a data model (CAR) that you can build upon to create a personalized, extended Customer Analytics Record (xCAR).

In general, an xCAR is a single object that holds extra data from multiple sources. For example, you can extend a customer record with their purchase history, subscriptions, activity on social media platforms, and so on.

Pega provides the CAR as a fully formed data model that is updated on an as-needed basis and published independently from Pega releases.

You can add the Pega-provided communications xCAR to your application by selecting the Communications setup option in the Pega Customer Decision Hub setup wizard when you first create your application in the Development instance of your system (recommended). If you run the wizard without selecting the Communications setup option, you can download the xCAR component from Pega Marketplace, and add it to your application manually.

Use the xCAR component in the following ways:

- As a reference to verify the data that is available to you. See Communications Customer Analytical Data Model.
- To create marketing strategies for particular business scenarios using Next-Best-Action Designer. See Creating a discount using CAR data in Pega Customer Decision Hub.

1. Create the following classes in your implementation layer that inherit from the standard classes that you want to extend:
   a. *YourOrganization-Data-Comms-Account* class that inherits directly from *PegaCDH-Data-Comms-Account*.
   b. *YourOrganization-Data-Comms-Subscription* class that inherits directly from *PegaCDH-Data-Comms-Subscription*.
   c. *YourOrganization-Data-Comms-Holding* class that inherits directly from *PegaCDH-Data-Comms-Holding*.

   For more information, see *Creating classes*.
2. Copy the table definitions of the classes that you created:
   a. In the navigation pane of Dev Studio, click **Records SysAdmin Database Table** .

   b. In the **Class name** column, search for *PegaCDH-Data-Comms-Account*, and then open the record by clicking it.
   c. Click **Test connectivity**.
3. Use the **Results** browser tab for reference to create your own table definitions for Account, Subscription, and Holding, for example, UComm-Data-Comms-Account.
4. Edit the data table rule for each of your classes to map them to the database tables, for example, *UComm-Data-Comms-Account* maps to *ucomm_account*.
5. Extend the data model with a new property in the Account, Subscriber, or Holding class:
   a. Create a new property.
   For more information, see Properties.
   b. Add the new property, for example, SocialSecurityNumber, to your Account implementation class, for example, *UComm-Data-Comms-Account*.
   c. Add the new column, for example, social_security_number, to your Account table definition, for example, *ucomm_account*.
   d. Update the external mapping of your Account implementation to map the column to the property.
   e. Modify the ETL procedure to populate the new property.
6. If you want to modify a property that already exists in the data model, for example by changing the type of the *PaymentPlusStatus* property from Text to Number:
   a. Add the modified property to your Account implementation class with the name and the type, for example, by adding PaymentPlusStatusNum to the *UComm-Data-Comms-Account*.
   b. Add the new column to your Account table definition, for example by creating the payment_plus_status_num column in *ucomm_account*.
   c. Update the external mapping of your Account implementation to map the column to the property.
   The *payment_plus_status_num* column name maps to the *.PaymentPlusStatusNum* property.
   d. Modify the ETL procedure to populate the property.
7. Resave the Context Dictionary configuration.

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Creating a discount using CAR data in Pega Customer Decision Hub

As a marketing analyst, use the Customer Analytics Record (CAR) provided by Pega Customer Decision Hub in a spreadsheet format to help design and formulate new offers in Next-Best-Action Designer.

For example, if you want to create a monthly discount for customers who have been with your company for more than two years, you need to know how long your customers have been with you.

For more information about the Discount action, see Adding and editing an example of a Discount action.

Before you begin: Go to the Pega Business Excellence page and download the *Communications Customer Analytical Data Model* spreadsheet.

1. In the spreadsheet, find the relevant data.
   In this example case, search for the *RelationshipStart* property.
2. In Next-Best-Action Designer, use the *RelationshipStart* property to directly define the eligibility conditions for the discount offer.
   See Configuring engagement policies for business groups.
3. In Pega Next-Best-Action Advisor, create the discount offer for your long-term customers.
   See Creating actions for Bundle Negotiator in Pega Next-Best-Action Advisor and use the *Communications Customer Analytical Data Model* spreadsheet to match your offer criteria to the properties.

What to do next: You can present your offer to the customer in a retention scenario or use it in a negotiation to compare with other offers. See Comparing actions with Bundle Negotiator in Pega Next-Best-Action Advisor.

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System integration in Pega Customer Decision Hub

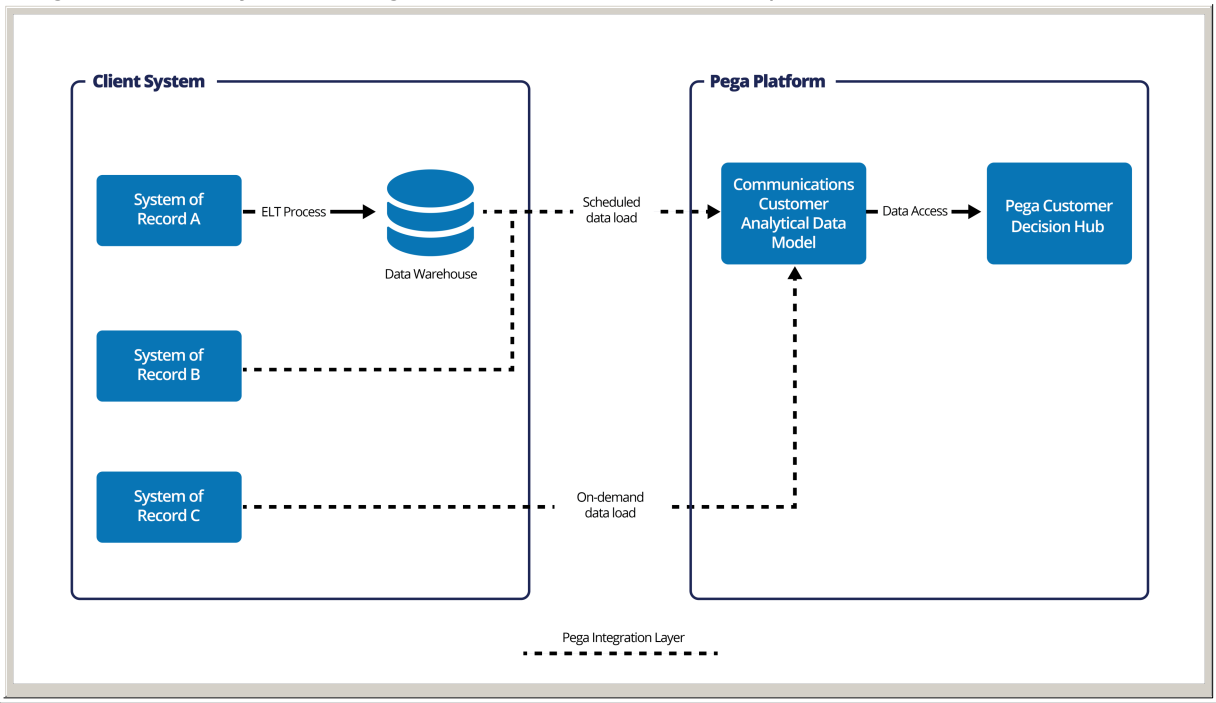
In a Pega Customer Decision Hub implementation for communications, Pega Next-Best-Action Advisor integrates with your customer data to provide you with next best actions, reveal customer behavior using predictive and adaptive analytics, and help run marketing outbound schedules.

For details on how Pega Platform integrates with your specific applications and databases, consult your delivery team.

In a regular implementation, Customer Analytics Records (CARs) originate in a system of record and go through a data warehouse in the form of a communications customer analytical data model. A data warehouse is a central repository of integrated data that can store both current and historical data in a single place.

Typically, Pega Customer Decision Hub is implemented in Pega Cloud. For more information on how the communications customer analytical data model is updated in Pega Cloud, see Ingesting customer data into Pega Customer Decision Hub on Pega Cloud. The following figure shows the implementation for on-premise environments:

Integration data layer for a Pega Customer Decision Hub implementation for communications



Client System
Pega Platform
System of Record A
ELT Process
Data Warehouse
Scheduled data load
Communications Customer Analytical Data Model
Data Access
Pega Customer Decision Hub
System of Record B
System of Record C
On-demand data load
Pega Integration Layer

A typical implementation provides the following CAR artifacts:

- xCAR tables: *comms_account*, *comms_subscription*, and *comms_holding*
- xCAR definition (classes and properties which access the xCAR, as shown in the data object relationship diagram in Communications data objects)

ETL strategy for sourcing data

It is your responsibility to determine the load strategy.

Because everyone’s data is different and comes from different sources (for example, data warehouses, billing data, interaction data from Pega Customer Service, and so on), determine your own extract, transform, load (ETL) solution to populate your CARs with data. This ensures that the load process fits your project’s specific business requirements.

Follow your ETL tool’s best practices to ensure that data population progresses without interruption. For example, take into account how long the process will take, the peak working hours in your office, and so on.

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Deployment options for the communications data model

Use the communications data model deployment with a Pega-provided relational database. By using this standard, SQL-based technology you maximize reuse and reduce implementation effort, particularly if you are deploying applications for outbound or audience-driven marketing campaigns, or multilevel decisioning (for example, strategies targeting households).

Optionally, you can use either the Decision Data Store (DDS), or combined relational and DDS databases, depending on your scenario. For more information, see Configuring the Decision Data Store service.

Decision Data Store as the default database for decision records

Your customer analytic data store is contained in Pega Platform using NoSQL technology. Use this option if you want to deploy your application for customer engagement activities on inbound channels.

Note: The Decision Data Store does not support multilevel decisioning.

Combined relational and Decision Data Store databases for decision records

Your customer analytic data store is contained in both SQL and NoSQL data stores. Pega Platform automatically replicates and maintains the data stores for maximum flexibility. Use this option if you want to deploy your application for customer engagement activities on both inbound and outbound channels.

Note: This approach does not support multilevel decisioning.

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Communications data objects

The Pega Customer Decision Hub application includes an extensible data model. The main data objects in this model that you can use for communications use cases are Account, Subscription, and Holdings.

The data model contains the customer details, including home address, telephone, and email. A summary of assets and liabilities is included in this data object, which consists of the following categories:

Profile Data
: Personal information, such as name and address.

Billing Data
: Payment information, such as bill amounts and payment methods.

Contract Data
: Information about the customer's contract, for example, its length and type (Internet, Mobile, Phone).

Interaction Data
: Information about the customer’s contact history, such as the reasons for their calls, and sentiment scores.

Internet Usage
: Information about the customer's internet service, for example, their current broadband upload and download speeds.

Landline Usage

Information about the customer's use of stationary phones.

Mobile Usage
: Information about the customer’s use of mobile phones, for example, roaming, data use, voice and text messages.

TV Usage
: Information about the customer’s viewing habits, for example, the kinds of programs they watch, the genres they enjoy, and purchases they have made related to TV services.

Behavior
: Information about the websites that the customer visits, for example login times, visit duration, assistance requests.

Product Holding List
: Information about the customer’s product holdings, for example, dates, IDs.

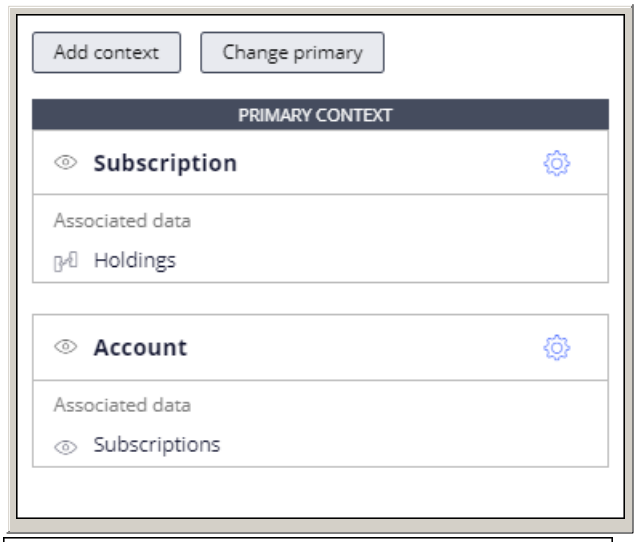
Offline Modeling
: Information on modeling used but not calculated in real time, for example, churn score, customer lifetime value (CLV), average revenue per user (ARPU).

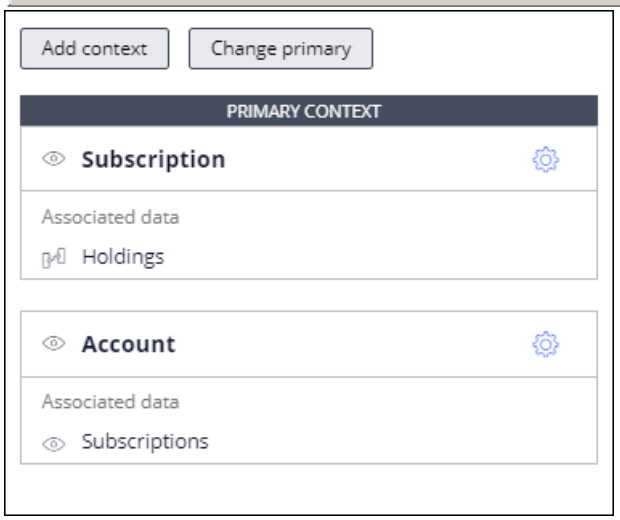
You can use the Holdings objects to locate and retrieve the current active recommendation that the customer chose earlier in the customer journey.

Data object relationship between Subscription, Account, and Holdings

The primary decision context is the main entity that business rules and models execute upon, as shown in the following figure:

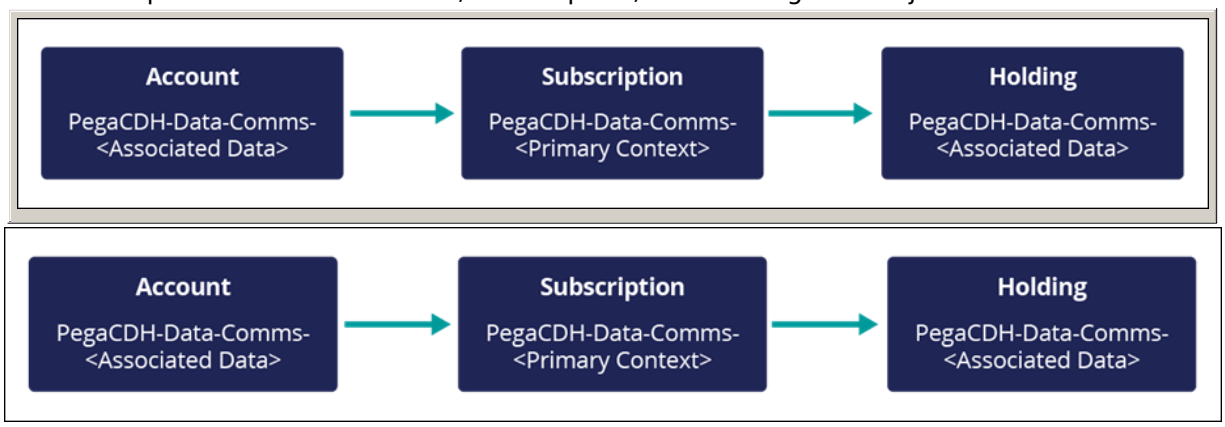
Definition of the primary context and its associated data in the Context Dictionary within Pega Customer Decision Hub





The Subscription data object is the primary context that can have multiple holdings or products in the *PegaCDH-Data-Comms-Holding* class. The Account data object (in the *PegaCDH-Data-Comms-Account* class) extends the Pega *Data-Party* class with more data and represents either a single account or an entire household. Each account can have multiple subscriptions in the *PegaCDH-Data-Comms-Subscription* class.

Relationships between the Account, Subscription, and Holding data objects.



You can use the context definition to add data objects to extend the model. For more information, see Defining customer contexts for multilevel decisioning in Pega Customer Decision Hub.

Rule types used

Pega Customer Decision Hub implements these data objects through Data Set rules. To learn more about data sets, see Data set rules, or contact your LSA.

Data sets are loaded and retrieved through Data Flow rules. Data flows orchestrate the movement of data from source to destination within Pega. Data flows also have the ability to transform your data.

To learn more about data flows, see Processing data with data flows.

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