

Telecommunications Customer Relationship Management Conceptual Business Model

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The telecommunications industry operates in one of the most competitive and data-intensive business environments in the modern economy. Companies that provide cellular phone services, mobile devices, wireless internet access, messaging platforms, streaming connectivity, and subscription-based communication services must manage enormous volumes of customer, billing, marketing, operational, and service-related information. A well-structured Customer Relationship Management (CRM) data model serves as the foundation for organizing this information to support operational efficiency, customer engagement, analytical reporting, and strategic decision-making.

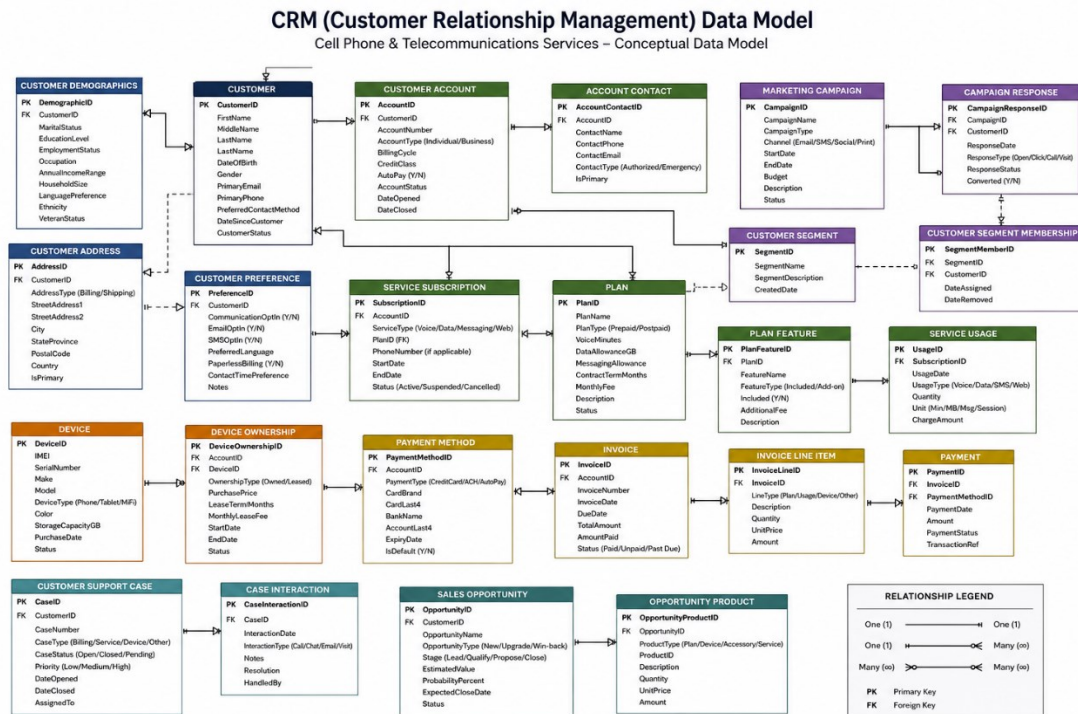
This conceptual business model was designed to represent the core business entities and relationships commonly found within a telecommunications CRM environment. The model focuses on customers, demographic profiling, service subscriptions, billing accounts, devices, invoices, marketing campaigns, customer support activities, and sales opportunities. The purpose of the model is to provide a high-level business-oriented representation of how information flows through a telecommunications organization that sells cellular phones, subscription plans, web access services, messaging services, and device leasing or financing programs.

The conceptual model emphasizes business meaning rather than technical implementation details. It identifies the major subject areas required to support customer acquisition, retention, service delivery, marketing segmentation, customer support, billing, and revenue management. Customer demographic information plays a central role in the model because modern telecommunications companies rely heavily on customer segmentation, targeted marketing campaigns, and behavioral analytics to compete effectively in rapidly changing markets.

This document is intended to serve as a foundation for logical and physical database design activities. Business analysts, data modelers, architects, developers, marketing teams, and database administrators can use this model as a reference when designing CRM systems, reporting solutions, customer analytics platforms, data warehouses, or master data management initiatives. The model may also be used for educational purposes to demonstrate how customer-

centric telecommunications systems are commonly organized within enterprise data architectures.

All entities, relationships, descriptions, structures, and examples presented in this document are original and created for educational and illustrative purposes. Any names, companies, products, addresses, phone numbers, account numbers, or business scenarios referenced within the model are entirely fictitious and are not intended to represent any real individual, organization, or telecommunications provider.



CRM Customer Demographics Conceptual Data Dictionary

Below is the entity data dictionary that identifies all entities in this model.

1. Entity Data Dictionary

Customer

The **Customer** Business Entity represents an individual or business that purchases, leases, or subscribes to the products and services.

Attribute	Description
CustomerID	Unique identifier for the customer.
FirstName	Customer's first name.
MiddleName	Customer's middle name or initial.
LastName	Customer's last name.
DateOfBirth	Customer's birth date, used for age-based demographics.
Gender	Customer's gender, if collected and permitted.
PrimaryEmail	Main email address used for communication.
PrimaryPhone	Main telephone number for the customer.
PreferredContactMethod	Preferred communication channel, such as email, SMS, phone, or mail.
DateSinceCustomer	Date the customer relationship began.
CustomerStatus	Current customer status, such as active, inactive, prospect, or closed.

Customer Demographics

The **Customer Demographics** entity stores descriptive demographic information used for marketing analysis, segmentation, campaign targeting, and customer profiling.

Attribute	Description
DemographicID	Unique identifier for the demographic record.
CustomerID	Customer associated with the demographic profile.
MaritalStatus	Customer's marital status.
EducationLevel	Highest known or reported education level.
EmploymentStatus	Employment status such as employed, retired, student, or unemployed.
Occupation	Customer's job type or professional category.
AnnualIncomeRange	Income band used for marketing segmentation.

Attribute	Description
HouseholdSize	Number of people in the customer's household.
LanguagePreference	Preferred language for communication.
Ethnicity	Optional demographic classification, where legally permitted.
VeteranStatus	Indicates whether the customer has veteran status, if collected.

Customer Address

The **Customer Address** entity stores one or more physical or mailing addresses for a customer.

Attribute	Description
AddressID	Unique identifier for the address.
CustomerID	Customer associated with the address.
AddressType	Type of address, such as billing, shipping, service, or mailing.
StreetAddress1	Primary street address line.
StreetAddress2	Secondary address information, such as apartment or suite.
City	City for the address.
StateProvince	State, province, or region.
PostalCode	ZIP code or postal code.
Country	Country for the address.
IsPrimary	Indicates whether this is the customer's primary address.

Customer Preference

The **Customer Preference** entity stores communication, privacy, billing, and contact preferences for a customer.

Attribute	Description
PreferenceID	Unique identifier for the preference record.
CustomerID	Customer associated with the preference record.
CommunicationOptIn	Indicates whether the customer permits general communications.
EmailOptIn	Indicates whether the customer allows email marketing.
SMSOptIn	Indicates whether the customer allows SMS/text marketing.
PreferredLanguage	Preferred language for written or spoken communication.
PaperlessBilling	Indicates whether the customer prefers electronic billing.
ContactTimePreference	Preferred time of day for contact.
Notes	Additional preference notes.

Customer Account

The **Customer Account** entity represents a billing or service account owned by a customer.

Attribute	Description
AccountID	Unique identifier for the customer account.
CustomerID	Customer who owns or controls the account.
AccountNumber	Business-facing account number.
AccountType	Type of account, such as individual, family, business, or corporate.
BillingCycle	Billing frequency or billing cycle day.
CreditClass	Internal credit classification.
AutoPay	Indicates whether automatic payment is enabled.
AccountStatus	Current account status, such as active, suspended, closed, or delinquent.
DateOpened	Date the account was opened.
DateClosed	Date the account was closed, if applicable.

Account Contact

The **Account Contact** entity stores additional people authorized to act on or communicate about an account.

Attribute	Description
AccountContactID	Unique identifier for the account contact.
AccountID	Account associated with the contact.
ContactName	Name of the contact person.
ContactPhone	Phone number for the contact.
ContactEmail	Email address for the contact.
ContactType	Type of contact, such as authorized user, emergency contact, or billing contact.
IsPrimary	Indicates whether this is the primary account contact.

Service Subscription

The **Service Subscription** entity represents a customer's active, past, or pending subscription to a telecommunications service.

Attribute	Description
SubscriptionID	Unique identifier for the subscription.
AccountID	Account associated with the subscription.
ServiceType	Type of service, such as voice, data, messaging, web access, or bundled service.

Attribute	Description
PlanID	Plan assigned to the subscription.
PhoneNumber	Phone number associated with the subscription, if applicable.
StartDate	Date the subscription began.
EndDate	Date the subscription ended, if applicable.
Status	Subscription status, such as active, suspended, cancelled, or pending.

Plan

The **Plan** entity defines sellable subscription plans offered by the company.

Attribute	Description
PlanID	Unique identifier for the plan.
PlanName	Name of the service plan.
PlanType	Type of plan, such as prepaid, postpaid, family, business, or promotional.
VoiceMinutes	Number of included voice minutes, if applicable.
DataAllowanceGB	Included data allowance in gigabytes.
MessagingAllowance	Included SMS or messaging allowance.
ContractTermMonths	Length of the plan agreement.
MonthlyFee	Standard recurring monthly fee.
Description	Business description of the plan.
Status	Plan status, such as active, retired, or promotional.

Plan Feature

The **Plan Feature** entity identifies individual features included in or added to a plan.

Attribute	Description
PlanFeatureID	Unique identifier for the plan feature.
PlanID	Plan associated with the feature.
FeatureName	Name of the feature.
FeatureType	Type of feature, such as included, optional, premium, or add-on.
Included	Indicates whether the feature is included by default.
AdditionalFee	Extra fee charged for the feature, if applicable.
Description	Description of the feature.

Service Usage

The **Service Usage** entity records usage activity for a service subscription.

Attribute	Description
UsageID	Unique identifier for the usage record.
SubscriptionID	Subscription associated with the usage.
UsageDate	Date the usage occurred.
UsageType	Type of usage, such as voice, data, SMS, web, roaming, or messaging.
Quantity	Amount of service consumed.
Unit	Unit of measure, such as minutes, megabytes, gigabytes, messages, or sessions.
ChargeAmount	Usage charge, if applicable.

Device

The **Device** entity represents a physical telecommunications device sold, leased, financed, or used by a customer.

Attribute	Description
DeviceID	Unique identifier for the device.
IMEI	International Mobile Equipment Identity number.
SerialNumber	Manufacturer serial number.
Make	Device manufacturer.
Model	Device model.
DeviceType	Type of device, such as phone, tablet, hotspot, or MiFi.
Color	Device color.
StorageCapacityGB	Device storage capacity in gigabytes.
PurchaseDate	Date the device was purchased by the company or customer.
Status	Device status, such as active, retired, lost, stolen, or returned.

Device Ownership

The **Device Ownership** entity connects a customer account to a device and identifies whether the device was purchased, leased, financed, or assigned.

Attribute	Description
DeviceOwnershipID	Unique identifier for the device ownership record.
AccountID	Account associated with the device.
DeviceID	Device associated with the account.
OwnershipType	Indicates owned, leased, financed, rented, or company-provided.
PurchasePrice	Purchase price of the device.
LeaseTermMonths	Lease term, if applicable.
MonthlyLeaseFee	Monthly lease or financing amount.
StartDate	Date the ownership or lease began.

Attribute	Description
EndDate	Date the ownership or lease ended.
Status	Current status of the ownership record.

Payment Method

The **Payment Method** entity stores account-level payment instruments.

Attribute	Description
PaymentMethodID	Unique identifier for the payment method.
AccountID	Account associated with the payment method.
PaymentType	Type of payment method, such as credit card, ACH, debit card, or autopay.
CardBrand	Card brand, if applicable.
CardLast4	Last four digits of the payment card.
BankName	Bank name for ACH or bank payments.
AccountLast4	Last four digits of the bank account.
ExpiryDate	Card expiration date, if applicable.
IsDefault	Indicates whether this is the default payment method.

Invoice

The **Invoice** entity represents a billing statement issued to an account.

Attribute	Description
InvoiceID	Unique identifier for the invoice.
AccountID	Account billed by the invoice.
InvoiceNumber	Business-facing invoice number.
InvoiceDate	Date the invoice was created.
DueDate	Date payment is due.
TotalAmount	Total invoice amount.
AmountPaid	Amount paid against the invoice.
Status	Invoice status, such as paid, unpaid, partial, past due, or cancelled.

Invoice Line Item

The **Invoice Line Item** entity stores individual charges that make up an invoice.

Attribute	Description
InvoiceLineID	Unique identifier for the invoice line item.

Attribute	Description
InvoiceID	Invoice associated with the line item.
LineType	Type of line item, such as plan, usage, device, tax, fee, credit, or adjustment.
Description	Description of the charge or credit.
Quantity	Quantity billed.
UnitPrice	Price per unit.
Amount	Total amount for the line item.

Payment

The **Payment** entity records payments made against invoices.

Attribute	Description
PaymentID	Unique identifier for the payment.
InvoiceID	Invoice associated with the payment.
PaymentMethodID	Payment method used.
PaymentDate	Date the payment was made.
Amount	Payment amount.
PaymentStatus	Status of the payment, such as approved, declined, pending, reversed, or failed.
TransactionRef	External transaction reference number.

Marketing Campaign

The **Marketing Campaign** entity represents a campaign created by the marketing department.

Attribute	Description
CampaignID	Unique identifier for the campaign.
CampaignName	Campaign name.
CampaignType	Type of campaign, such as promotion, retention, acquisition, win-back, or upgrade.
Channel	Campaign delivery channel, such as email, SMS, social media, print, call center, or web.
StartDate	Campaign start date.
EndDate	Campaign end date.
Budget	Planned campaign budget.
Description	Campaign description.
Status	Campaign status, such as planned, active, completed, cancelled, or paused.

Campaign Response

The **Campaign Response** entity records how customers respond to marketing campaigns.

Attribute	Description
CampaignResponseID	Unique identifier for the campaign response.
CampaignID	Campaign associated with the response.
CustomerID	Customer who responded or was targeted.
ResponseDate	Date of the response.
ResponseType	Type of response, such as open, click, call, visit, inquiry, purchase, or opt-out.
ResponseStatus	Status of the response.
Converted	Indicates whether the campaign response resulted in a conversion.

Customer Segment

The **Customer Segment** entity defines marketing groupings used for targeting and analysis.

Attribute	Description
SegmentID	Unique identifier for the segment.
SegmentName	Name of the customer segment.
SegmentDescription	Description of the segment rules or purpose.
CreatedDate	Date the segment was created.

Customer Segment Membership

The **Customer Segment Membership** entity connects customers to one or more customer segments.

Attribute	Description
SegmentMemberID	Unique identifier for the segment membership record.
SegmentID	Segment assigned to the customer.
CustomerID	Customer assigned to the segment.
DateAssigned	Date the customer was assigned to the segment.
DateRemoved	Date the customer was removed from the segment, if applicable.

Customer Support Case

The **Customer Support Case** entity represents a customer service, billing, technical, or device-related issue.

Attribute	Description
CaseID	Unique identifier for the support case.
CustomerID	Customer associated with the case.
CaseNumber	Business-facing case number.
CaseType	Type of case, such as billing, service, device, technical, or complaint.
CaseStatus	Case status, such as open, pending, resolved, closed, or escalated.
Priority	Case priority, such as low, medium, high, or critical.
DateOpened	Date the case was opened.
DateClosed	Date the case was closed.
AssignedTo	Employee, queue, or team assigned to the case.

Case Interaction

The **Case Interaction** entity records individual contacts, notes, or actions taken on a support case.

Attribute	Description
CaseInteractionID	Unique identifier for the case interaction.
CaseID	Case associated with the interaction.
InteractionDate	Date and time of the interaction.
InteractionType	Type of interaction, such as call, chat, email, store visit, or note.
Notes	Notes describing the interaction.
Resolution	Resolution details, if applicable.
HandledBy	Employee, agent, or team that handled the interaction.

Sales Opportunity

The **Sales Opportunity** entity represents a potential sale, upgrade, renewal, or retention opportunity.

Attribute	Description
OpportunityID	Unique identifier for the sales opportunity.
CustomerID	Customer associated with the opportunity.
OpportunityName	Name or short description of the opportunity.
OpportunityType	Type of opportunity, such as new sale, upgrade, win-back, renewal, or cross-sell.
Stage	Sales stage, such as lead, qualify, propose, close, won, or lost.
EstimatedValue	Estimated monetary value of the opportunity.
ProbabilityPercent	Estimated probability of closing the opportunity.
ExpectedCloseDate	Expected date the opportunity may close.

Attribute	Description
Status	Current opportunity status.

Opportunity Product

The **Opportunity Product** entity identifies products or services included in a sales opportunity.

Attribute	Description
OpportunityProductID	Unique identifier for the opportunity product record.
OpportunityID	Opportunity associated with the product or service.
ProductType	Type of product, such as plan, device, accessory, or service.
ProductID	Identifier of the related product, plan, service, or device offering.
Description	Description of the proposed product or service.
Quantity	Quantity proposed.
UnitPrice	Proposed unit price.
Amount	Total proposed amount.

2. Relationship Data Dictionary

Customer-Centered Relationships

Relationship	Cardinality	Description
Customer to Customer Demographics	One to Zero or One	A customer may have one demographic profile, but demographic data may be absent if not collected.
Customer to Customer Address	One to Many	A customer may have multiple addresses, such as billing, shipping, mailing, or service addresses.
Customer to Customer Preference	One to Zero or One	A customer may have one preference record that controls communication and billing preferences.
Customer to Customer Account	One to Many	A customer may own or control one or more billing or service accounts.
Customer to Campaign Response	One to Many	A customer may respond to many marketing campaigns over time.
Customer to Customer Segment Membership	One to Many	A customer may belong to multiple marketing segments.
Customer to Customer Support Case	One to Many	A customer may open many support cases.
Customer to Sales Opportunity	One to Many	A customer may be associated with many sales opportunities.

Account and Subscription Relationships

Relationship	Cardinality	Description
Customer Account to Account Contact	One to Many	An account may have multiple contacts, such as authorized users, billing contacts, or emergency contacts.
Customer Account to Service Subscription	One to Many	An account may contain multiple service subscriptions, such as phone, data, web access, or messaging services.
Customer Account to Device Ownership	One to Many	An account may be associated with multiple devices that are owned, leased, or financed.
Customer Account to Payment Method	One to Many	An account may have multiple payment methods on file.
Customer Account to Invoice	One to Many	An account may receive many invoices over time.

Plan and Usage Relationships

Relationship	Cardinality	Description
Plan to Service Subscription	One to Many	A plan may be assigned to many customer subscriptions.
Plan to Plan Feature	One to Many	A plan may contain many included or optional features.
Service Subscription to Service Usage	One to Many	A subscription may generate many usage records for calls, data, messages, web access, or other services.

Device Relationships

Relationship	Cardinality	Description
Device to Device Ownership	One to Many	A device may have multiple ownership or lease records over time if it is returned, reassigned, resold, or leased again.
Customer Account to Device Ownership	One to Many	An account may be linked to many devices through purchase, lease, or financing records.

Billing and Payment Relationships

Relationship	Cardinality	Description
Invoice to Invoice Line Item	One to Many	An invoice is composed of one or more line items, such as plan charges, device charges, usage fees, taxes, or credits.
Invoice to Payment	One to Many	An invoice may receive one or more payments, including partial payments.

Relationship	Cardinality	Description
Payment Method to Payment	One to Many	A payment method may be used for many payments over time.

Marketing Relationships

Relationship	Cardinality	Description
Marketing Campaign to Campaign Response	One to Many	A campaign may produce many customer responses.
Customer to Campaign Response	One to Many	A customer may generate many responses across different campaigns.
Customer Segment to Customer Segment Membership	One to Many	A segment may contain many customers.
Customer to Customer Segment Membership	One to Many	A customer may belong to many segments.

Customer Service Relationships

Relationship	Cardinality	Description
Customer Support Case to Case Interaction	One to Many	A support case may have many interactions, such as calls, chats, emails, notes, or visits.
Customer to Customer Support Case	One to Many	A customer may have multiple support cases over time.

Sales Opportunity Relationships

Relationship	Cardinality	Description
Customer to Sales Opportunity	One to Many	A customer may have many sales opportunities.
Sales Opportunity to Opportunity Product	One to Many	A sales opportunity may contain multiple proposed products or services.

Summary

This conceptual CRM model supports customer demographics, account management, subscriptions, plans, devices, billing, payments, marketing campaigns, segmentation, service usage, support cases, and sales opportunities. It is designed for a telecommunications company that sells cell phones, subscription plans, web access, messaging services, and device leases or purchases.