

# ***PROJECT DESIGN REPORT***

## ***TEKSUS TELECOMMUNICATIONS:***

***ADITYA TORNEKAR***



Teksus Telecommunications

# PROJECT SUMMARY

Teksus Telecommunications, a company with diverse set of telecommunication products and services wants to leverage its customer data, for gaining actionable insights to boost its sales and try and create a monopoly in the industry using targeted marketing and on the fly services. The firm provides services such as internet services (wireline & wireless), Cable TV, telephone & mobile services, Voice over IP and over the top (OTT) video streaming services similar to video on demand.

Currently, majority of the billing & customer related data is handled physically, and the firm is planning on going digital on all its data sources. This transition will not only bring all data sources together but will also make data available on the go. This project will additionally help in creating better actionable marketing insights due to all forms of data integrated at one place, which will be used by leadership teams for running marketing campaigns.

For instance, data collected while creating a new account for a customer will include customer location data in form of address, this geographic and demographic data will be further used to understand which population and what areas are already exposed to what products, which will be used to market the products accordingly where required. A geographic area where majority of the population is above 50 years of age might not go for OTT video streaming services but might use Cable TV or telephone services. On the contrary, areas near an educational university will have students in huge numbers where the OTT services and VOIP services might become popular as some international students might want to make international calls where VOIP will come into picture.

## DESIGNED SOLUTION:

- The sales representative will create an account either at the store or by going to an individual's house where all the customer and product related data will be collected and stored in the database in account, customer location and product-subscription table.
- Customer opting to subscribe to the services online through the website will also be asked for similar data which will be further integrated in the same database.
- The database development team will further organize and store the clean data in the CRM database.
- The Chief Data Office (CDO) team will maintain the database structure integrity and also maintain various users who are accessing the database.
- The reporting teams will create relevant dashboards and reports using customer-location and other relevant tables which will be used further by the leadership team to understand the market conditions and make decisions accordingly.
- These insights will be shared to the sales teams to try and gather more customers efficiently.
- The marketing teams will use the data to create automated relevant emails and improve customer relationship services.
- In case of events like Superbowl, Thanksgiving and other events the marketing teams will bring new products and services with better price structures.

# ENTITY & ATTRIBUTE TABLE

<b>DATA OBJECT:</b> <b>TEKCRMDB</b>	This customer relationship management database stores all tables and data used for generating reports for marketing campaigns and sales.
<b>Account</b>	This table stores all primary account holder details and assigned account identifier.
<u>acct_id</u>	<b>PRIMARY KEY:</b> This is a unique ID assigned to each new account holder to identify a unique customer.
acct_fname	This is the first name of the account holder.
acct_lname	This is the last name of the account holder.
acct_eff_dt	The start date of the account.
acct_end_dt	The account closing date used for historical data analysis.
acct_cust_sgmnt_cd	This element defines the segmentation of a customer. H = House, O = Organization, E = Educational Institution, I = Individual
load_dt_tm	Timestamp at which the account was loaded in the system.
updt_dt_tm	Timestamp at which the account was updated in the system.
<b>Billing</b>	This table stores the billing data associated to each account.
<u>billing_id</u>	<b>PRIMARY KEY:</b> This is a unique ID assigned to each new monthly generated bill for an account.
acct_id	<b>FOREIGN KEY:</b> Associated with the PK of Account table. (Many billing_ids can have one acct_id)
billing_address	Address of the customer where the bill is to be posted. (might be different from address where service is provided)
billing_payment_mode	The payment mode used by the customer (C-Credit, D-Debit, CC-Cash)
billing_eff_dt	The date of each month from which billing was started for the account.
billing_end_dt	The date of each month till the account was billed.
load_dt_tm	Timestamp at which the billing_id was loaded in the system.
updt_dt_tm	Timestamp at which the billing_id was updated in the system.

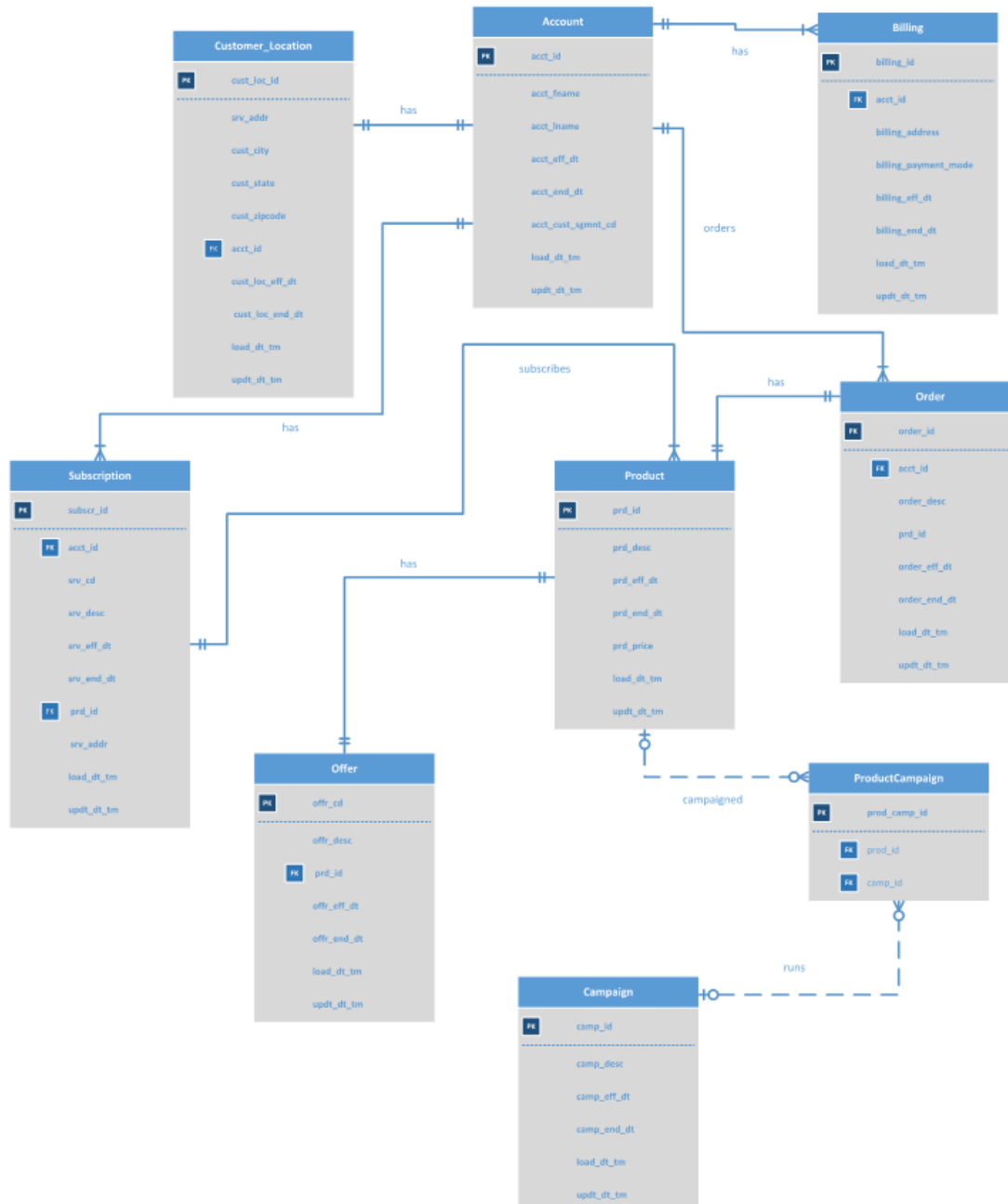
<b>Subscription</b>	This table stores the product-subscription related data of an account holder.
<u>subscr_id</u>	PRIMARY KEY: This is a surrogate key generated for every unique account-product subscription combination.
acct_id	FOREIGN KEY: This is associated to PK of the Account table. (Many subscr_ids can have one acct_id)
srv_cd	This classifies the type of service customer has subscribed. M = Mobile Services, T = Telephone services, IW = Internet Wirelines, IWL = Internet Wireless, CT = Cable TV, OTT = Over the Top, VOIP = Voice over IP
srv_desc	Description of the service code(srv_cd)
srv_eff_dt	Start date of the subscription(>=acct_eff_dt)
srv_end_dt	End date of the subscription(<=acct_end_dt)
prd_id	FOREIGN KEY: This is associated to the PK of the Product table which identifies the subscribed product. (One prd_id may be associated to multiple subscr_ids)
srv_addr	This is the street address where the service is provided.
load_dt_tm	Timestamp at which the subscr_id was loaded in the system.
updt_dt_tm	Timestamp at which the subscr_id was updated in the system.
<b>Product</b>	This table stores the product information offered by the firm.
<u>prd_id</u>	PRIMARY KEY: This is a unique ID assigned to each new product.
prd_desc	This is the description of the prd_id.
prd_eff_dt	This is the date from which the product was available for subscription.
prd_end_dt	This is the date from which the product was made obsolete and closed for subscription.
prd_price	This is the set price of the product.
load_dt_tm	Timestamp at which the prd_id was loaded in the system.
updt_dt_tm	Timestamp at which the prd_id was updated in the system.
<b>Offer</b>	This table stores the information of all the available offers on a product.
<u>offr_cd</u>	PRIMARY KEY: This is a unique code assigned to each offer given on a product.



offr_desc	This is the description of the offr_cd.
prd_id	FOREIGN KEY: This is associated to the PK of Product table. (One product must have one offer only)
offr_eff_dt	The date from which the offer was valid on a product.
offr_end_dt	The date at which the offer validity expired on a product.
load_dt_tm	Timestamp at which the offr_cd was loaded in the system.
updt_dt_tm	Timestamp at which the offr_cd was updated in the system.
<b>Order</b>	This table stores all the order information placed by an account holder. <b>NOTE:</b> A new order is placed for every new product/service purchased by an account holder.
<u>order_id</u>	PRIMARY KEY: This is a unique ID assigned to each order placed by an account holder.
acct_id	FOREIGN KEY: This is associated to the Account table. (One acct_id might be associated to multiple order_id)
order_desc	This is the description of order or any other details added by the customer.
prd_id	FOREIGN KEY: This is associated to the Product table.(One order_id is associated to one prd_id only)
order_eff_dt	This is the date when the order was placed.
order_end_dt	This is the date when the order was closed.
load_dt_tm	Timestamp at which the order_id was loaded in the system.
updt_dt_tm	Timestamp at which the order_id was updated in the system.
<b>Customer_Location</b>	This table stores all the location details of a customer.
<u>cust_loc_id</u>	PRIMARY KEY: This is a unique ID assigned to each customer location which considers a combination of account name and service address
srv_addr	This is the street address where the service is provided.
cust_city	This is the city where the service is provided.
cust_state	This is the state of the cust_loc_id(e.g. NY,MA)
cust_zipcode	This is the zipcode where the service is provided.
acct_id	FOREIGN KEY: This is associated to the Account table. (One acct_id is associated to one cust_loc_id only)

cust_loc_eff_dt	This is the date from which the customer location of the account holder was valid.
cust_loc_end_dt	This is the date from which the validity of the customer location expired.
load_dt_tm	Timestamp at which the cust_loc_id was loaded in the system.
updt_dt_tm	Timestamp at which the cust_loc_id was updated in the system.
<b>Campaign</b>	This table stores all the marketing campaigns details.
<u>camp_id</u>	PRIMARY KEY: This is a unique ID assigned to each new campaign.
camp_desc	This is the description of the campaign.
camp_eff_dt	This is the date when the campaign started.
camp_end_dt	This is the date when the campaign ended.
load_dt_tm	Timestamp at which the camp_id was loaded in the system.
updt_dt_tm	Timestamp at which the camp_id was updated in the system.
<b>ProductCampaign</b>	This table stores product & campaign related data.
prod_camp_id	PRIMARY KEY: This is a surrogate key which is generated for a combination of prod_id & camp_id.
prod_id	FOREIGN KEY: This is associated to the PK of Product table.
camp_id	FOREIGN KEY: This is associated to the PK of Campaign table.

# RELATIONAL DATA MODEL



## BUSINESS RULES

- A new order is placed for every new product/service purchased by an account holder.
- Subscription is processed after account opening and subscription is closed before account closing.
- An account holder must have at least one subscribed product.
- A product with different offer will be considered as a different product.

## MAJOR DATA QUESTIONS

- **Chief Data Office Team:** These people have all the access on all the tables as they are the people responsible for maintaining the database and further the data warehouse as well. The CDO team will be working on data questions like is the database tuned and is data integrity maintained across the system. This team also provides relevant access to the below mentioned users.
- **Developers:** Data integration engineers who will populate the data have read only access for understanding the system and thus creating new tables. The developers will query database to understand the new business cases. For instance, if a new government policy is implemented due to which the ethnicity of a customer is to be encrypted, then the developers need to check the whole database for related columns.
- **Read-Write User:** This user is created mostly for manipulating data in the table. This virtual user has more access than the Developers, as it has Write access as well on the database. This user will only be able to check and answer the production performance in some dummy table if required.
- **Marketing Users:** These users might be divided into two parts i.e. one inside the organization and teams outsourced for carrying out marketing operations. These users can query database using read only access to answer questions such as, **what geographic location has customers who use certain product more frequently? Which product is more effective when associated with an offer? Which consumer age group on an average uses which product?**
- **Reporting Team:** This team has read only access and will use some indicator elements for generating fast reports for better understanding of real time situations and making future projections. This team helps marketing team with questions like, **which product can give best ROI in upcoming future?**
- **Data-lake Team:** This team will store historical data for better regression analysis and checking historic patterns. This team can question any projection data as this team has all the data from all domains of the organization and has read access on various other databases as well.
- **Customers:** These are the end users and are provided GUI for interacting with the database to check billing details, promocode options on new products & checking order history and status.