Customer 360

A Case Study from the AEIC Data Analytics Council
Acknowledgements

The Association of Edison Illuminating Companies would like to acknowledge the contributions of the following members of the AEIC Data Analytics Council that produced this whitepaper:

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Customer 360

Introduction
Having access to customer data is essential to gaining a deep understanding of the customer. This means being able to cater to customers as individuals and understand the nuances that exist within the customer base. Today, companies have access to many sources of data that can help them understand customers, but often that data is fragmented and locked away in physical or organizational silos. Developing a 360-degree view of the customer is the first step in being able to understand customer priorities, preferences, and pain points. This single end-to-end view of all customer data is on the critical path for being able to deepen customer relationships and predict future product needs. Without it, a company is only able to paint an image of the average customer in very broad strokes.

Preliminary Business Planning
Overview
The objective of this project is to develop an approach and document the steps necessary to develop a customer centric view of data. Customer 360 organizes data in such a way that the entire customer journey with the utility is transparent and positioned for actionable improvement. There are several ways to develop the customer journey data depending on the company's overall approach to improvement initiatives:

- Customer Driven – investment in development is based on customer expectations and preferences. Some utilities develop journey maps outlining the customer experience with various utility processes and prioritize improvement based on customer pain points.

- Analytics Driven – investment is based on the need for actionable insights so the focus is on development of specific use cases that may lead to other pursuits. Development of digital twins, propensity models, and predictive analytics can serve as the initial driver for implementation.

- Technology Driven – investment in specific large-scale technologies influence timeline and deployment to better coordinate implementations and prioritize capital spending.
Business Objectives & Success Criteria

Executive sponsorship is critical to success of development of customer journey data and related analytical insights. Leaders should be prepared to approach the Customer 360 as a journey rather than a one-time project. Most companies require cultural, organizational, and process changes to become more data-driven; not just a new data store or technology. Often, expensive technologies and resources are utilized without clear business objectives and outcomes defined which can create questions regarding the value of development. Identification of a few initial use cases such as 1) the ability to proactively notify customers about outage or high bill information, 2) real time drivers that impact customer satisfaction measures or 3) propensity based scoring that drives product marketing or field collections will provide the needed structure and associated results measurement to gain confidence in the data.

Success measures identified should include business and customer metrics. Business metrics may include decreased regulatory complaints and/or call volumes and field activity. Customer metrics include improvements in customer satisfaction (CSAT), First Contact Resolution (FCR) and Net Promoter Score (NPS). Measures associated with project completion and acceptance may include burndown rate (e.g. trend of completed and remaining work over a specified time period), usability of the tool, and page landings for example.

Project Team

Customer insights have maximum value when the focus is on real-time insights connected with front-line execution. The project team should include stakeholders primarily associated with customer data including areas like customer service, compliance, billing, collections, account management, settlements, corporate communication, marketing, and information technology areas which support customer systems and utility analytics. There is additional value in including stakeholders that will use customer data to improve business operations. These stakeholders and other subject matter experts (SMEs) should be apprised and engaged for discussion throughout development regarding impacts to operations and customer feedback.

Following development of the Customer 360, resources will be needed to maintain data quality and governance so inclusion of identified resources early in the process will be helpful during transition of the project to the business to maintain.

Development/Implementation

Platform Development

The architecture of the Customer 360 effort can take many forms and will depend on the overall strategy addressed in preliminary business planning. A few of the data management approaches are outlined:
• **Business Information Warehouse** – data repository system where data is loaded from one or more disparate sources. It can be aggregated, exported, and analyzed. The data is typically structured and defined for a specific purpose or reporting. Adding data to the warehouse may take time to prepare it for storage and can be costly based on space and storage requirements.

• **Data Lake** – data repository for storing data that is structured, semi-structured, or unstructured. The data flows into the lake from multiple sources in its raw state. Non-traditional data sources such as web server logs, social network activity, and text messages and images can be housed and interrogated in the data lake. Data lakes can provide faster insights but may not be conducive to users who are only interested in a finished report.

• **Data Mart** – a subject-oriented database that is often a partitioned segment of an enterprise data warehouse that aligns with a particular business unit. Due to their smaller size and focus on a single subject, data marts are typically used for making tactical decisions at the department level.

• **Customer Data Platform (CDP)** - a type of packaged software which creates a persistent, unified customer database that is accessible to other systems. Data is pulled from multiple sources, cleansed and combined to create a single customer profile. This structured data is then made available to other systems.

• **Federated Data Warehouse** – individual source systems maintain control over their own data but agree to share some or all this information to other participating systems upon request.

• **Application Programming Interfaces (APIs)** - APIs allow one program or interface to access another program to retrieve needed data or program functionality.

• **Logical Data Warehouse / Virtual Data Fabric** – The use of a Data Virtualization tool allows for virtual integration of disparate data sources and allows data to stay at rest. Logically federated data sets are created and governed in an abstraction layer where source details are shielded from data consumers. This approach may be attractive to organizations with many data “silos” and a desire to minimize data integration costs.

**Integration**

Customer data integration is about making all the data, tools, and teams work together seamlessly. There are many different methods to integrate customer data, but they fall broadly into three main categories.

• **Manual** – includes copy-paste, manual data entry, importing & exporting CSVs, updating spreadsheets, etc.

• **Automated** – includes the use of APIs and webhooks to sync data between tools. Integration libraries give a variety of "one-click" integrations. Workflow tools also come under this category.

• **Engineered** - teams use APIs and webhooks to build and maintain their own integrations and data flows. This includes writing & maintaining scripts, building & maintaining data warehouses, setting up webhooks, and fetching data from a backend database.
In general, the more complex the data integration needs, the fewer manual methods, and more automated & engineered data integration methods will be used.

**Presentation Layer**

Presentation layers bring the Customer 360 data to the end users. The User interfaces can be standalone dashboards or integrated into an application or a mobile platform.

In the fall of 2018, the Eversource Voice of the Customer team launched a Customer Experience Dashboard (CX Dashboard) in the Microsoft Power BI service to display results from several multi-channel customer satisfaction surveys. Results are complimented with system data, benchmark data and demographic data obtained through Experian. Data is hosted in the Microsoft Azure Cloud service, which makes the CX Dashboard one of the first cloud-based solutions developed within Eversource. The dashboard is designed to give Eversource leadership a near-real time, dynamic view of customer sentiments, with data gathered on a daily basis using newly developed automated survey distributions. The dashboard is viewable on a desktop or mobile device.

Development of dashboards or other medium media may be required based on the individual use case and the expected results. If the data lake is being developed for analytics use only, visualization may not be necessary. There are several options for visualizing results such as QlikView and Tableau which may be prescribed based on the corporate platform.

With the access to more data, organizations, can begin to move from prescriptive analytics to predictive analytics. We can begin to predict customer’s actions, calls, contacts, current trends and long-term trends.

**Development Approach**

There are many ways to approach development of the platform including building the solution internally, using outside consulting, or purchasing off the shelf technology. In addition, initial decisions need to be made as to whether the solution will be cloud based or leverage premise-based systems and tools. The following highlights some of the advantages and disadvantages of these options.

- **Internal Development**

  *Advantages:* Development is custom built for the specific purpose and the timeline and investment can be modified to business needs. Additionally, broader stakeholder involvement and expertise can be leveraged as well, as the skillsets to maintain are inhouse.

  *Disadvantages:* Disadvantages may include length of time needed to stand up and fully realize business benefits as well as limitations with inhouse subject matter experts.
• **Vendor Supplied Options**
  *Advantages:* Vendor supplied technology options are a quick way to understand and potentially integrate a usable option into an existing utility operation. It has the benefit of seeing how the solution has been deployed in other companies.
  *Disadvantages:* Specific utility use cases may be limited due to the concept of Customer 360 within the utility industry is still a relatively new idea. The utilities that have implemented this type of data view generally have already fully deployed AMI so the development fits nicely with the abundance of data.

• **Consulting**
  *Advantages:* Broad external knowledge of industry successes and failures may prevent missteps with implementation and provide the additional benefit of training internal resources to maintain.
  *Disadvantages:* Consulting services are higher cost than internal only resource costs and may limit broader involvement across the company, at least initially.

**Other Considerations:**

• **Cloud Based**
  *Advantages:* Cloud solutions are generally easier to scale up and down if the data or system usage fluctuates. It is also easier to scale up from a smaller initial implementation to full scale.
  *Disadvantages:* Challenges may exist with funding the project due to utility accounting decisions regarding whether the implementation costs can be capitalized or must be expensed.

• **Traditional* Premise Based**
  *Advantages:* Implementation costs can generally be capitalized which is an important factor with utilities
  *Disadvantages:* The upfront costs are higher due to hardware costs that must be purchased to support the project. Onsite technical support may require additional dedicated resources to support the maintenance.
  * some companies have their own cloud-based architecture on premise – these are referred to as private clouds

• **Methods**
  *Agile Development:* Common method for technology implementation that is desirable due to potentially lengthy implementations can be separated into short “sprints” which delivers value faster and identifies business issues prior to full deployment. Agile encourages collaboration and allows changes and adaptation during the project. This flexibility reduces risks and allows for delivery of results with high quality.
  *Waterfall Development:* Traditional approach to development which includes phased execution and typically lengthier implementation and results. The disadvantage to using the waterfall approach is that all results occur at or after implementation.
• **Deliverables**
  The specific deliverables should be outlined and approved prior to commencement of the project. Deliverables may include portal development, mobile applications, specific dashboards and initial interfaces and related source data. Customer data is used by everyone and defining a multiyear timeline that meets stakeholder expectations is critical to achieving buy in and coordinating needed resources and funding.

**Source Data/Voice of the Customer (VOC)**

A good place to start is to identify all the touchpoints with the customer and assess completeness of the data. Initial decisions will need to be made to determine the level of investment that will be made to secure Voice of the Customer (VOC) data. This is information that is specifically from the customer and includes internal and external data, customer feedback sources, and customer research. Services exist today that provide real time customer feedback that are no longer dependent on lengthy surveys and limited customer response rates.

Specific sources to consider:

• **Internal Data** – inventory listing of customer source data (spell out - outage data, outage history, billing history, customer contact notes, etc. – think about all the reasons we categorize our calls around today – New Service, Billing, Credit....)

• **External Data** – weather, demographics social media (difficult to tie to customer); include examples of any external data sources agents use during a call such as Accurint/Lexis Nexis to eliminate needing to consult multiple sources.

• **Use of Survey Data** – batch, real time
  With the automation of the survey process and development of the Customer Experience Dashboard, the Eversource Voice of the Customer team is now in a far better position to understand customer needs, identify their pain points and share this information with the right partners to create and support initiatives. Moreover, the results being automated and in near-real time, which allows Eversource to course correct if results are seen to be going in the wrong direction much more quickly than was possible when data was only collected monthly. Surveys are conducted through multiple channels including third-party live agent calls, emails and text covering a wide range of customer touchpoints using a consistent survey platform. Real-time alerts have been established to notify respective teams of responses that may need immediate attention as soon as the respondent submits the survey. Additionally, the automation includes system data and Experian data about the respondent which enables a broader 360 view of the customer and their experience.

Response rates vary with real time surveys but are generally more successful than periodic surveys. Eversource has seen response rates of 10-12% from e-mail to a higher 35%-40% using text survey. The response rate is dependent on the complexity of the survey. Text surveys with one question can be very successful.

• **Customer Attribute Data** – preferred payment methods, billing options, credit active
Illustration 1: Exelon created a central repository or data lake to house all the disparate sources of customer data and is depicted in the following diagram:
Illustration 2: The following conceptual diagram illustrates a data lake in development at FirstEnergy.

A central repository promotes ease of use and more actionable insights instead of time spent developing queries from various sources and finding ways to combine the data.
Customer Journey Mapping

Another way to capture the customer view is to create a customer journey map. Customer journey mapping illustrates the customer journey through the utility processes and identifies areas that have a positive or negative impact on the customer. Many utilities use customer journey maps to prioritize process and technical improvements by focusing on the negative interactions to improve them. Ideally, focus areas eliminate or minimize the interactions that have a negative consequence to both the customer (e.g. high effort) and the business (e.g. increased cost). Evaluating a customer’s journey given all the types of interactions they have with the utility can clarify the entire view of the customer.

Data Governance

Data Governance is a mechanism for managing the definitions and rules associated with data, for assigning accountability and control for data, and providing transparency into the health of data. Establishing a Data Governance framework starts with identification of the Stakeholders, Data Owners, Data Stewards and System Administrators.

There are many data governance tools that perform traditional management functions, specific tools have emerged that address governance program and policy management and data quality. Picking the right tools for your Data Governance framework is not so much about the tools as it is about knowing the goals and objectives of your own Data Governance strategy.

- **Governance Stakeholders** – All impacted departments, data and system owners.
- **Data Owners** – Owns and is accountable for the data sources.
- **Primary Data Stewards** – Responsible for the data. The Steward knows and understands their data. The Stewards define each of their data attributes, assigns the security, approves access and is ultimately responsible for the data quality. Generally, the data steward is the daily functional representative for the data owner.
- **Secondary Data Steward** – Backup for the Primary Steward.
- **System Administrator** - IT Primary core support or person who can make changes to the system where the data sources reside.

Once the Stakeholders are identified there is a need to document the definitions, details, security and mapping of the data attributes. The creation of the Business Glossary, Data Dictionary and Data Catalog, are the first steps to building the Data Governance and Data Quality Framework.

- **Business Glossary** – Business language definitions of the data elements being used. Can be used enterprise wide.
- **Data Dictionary** – Includes details about the data such as name, description, data type, permissible length, lineage, transformations, and security/access. These definitions/rules can also be referenced by the Data Governance and Data Quality Tools.
• **Data Catalog** – Provides the mapping between the Business Glossary and Data Dictionary. It also documents the location(s) where each specific data element or grouping element exists.

**Change Management**

A communication plan is needed to provide updates throughout the development process to facilitate user acceptance. Regular updates to sponsors and steering team are part of the plan, but communications to the affected business subject matter experts are also necessary to ensure a smooth transition with clear role assignments. Effective change management is especially important when utilizing real time customer survey data. Use of real time data requires real time decision making and results visualization but is not useful if the organization has not moved away from traditional reporting that is periodic. Leveraging Lunch and Learns and periodic communications that spotlight topics of interest with links to results encourages navigation to dashboard results and enthusiasm toward problem resolution based on the trending discovered. One method described as *white glove training*, features one on one sessions with executive leadership to promote mainstream utilization.
**Data Privacy & Security**

While customer information and data are essential to any Customer 360, keeping the customer’s information private and secure is required.

Customer 360 data security policy should define Personally Identifiable Customer Information, or PII. PII data should always be secure and access should be limited. PII definitions may vary from utility to utility. Examples of PII:

- Names
- Street addresses
- Telephone numbers
- Email addresses
- Social Security numbers
- Account numbers (including utility account numbers, credit card numbers, bank account numbers)
- Account balances
- Any information received to identify the customer, such as driver’s license, passport, or information collected to establish their credit worthiness
- Meter identifier and meter interval/electricity use data that is released in combination with other bullets above

Each utility will need to evaluate and understand their own data security requirements, as well as consider future potentially sensitive data sourced through new applications.

**Maintenance and Upkeep Costs**

Customer 360 like any system or application will require annual maintenance, storage components, patches and upgrades. Dedicated Resources will also be required either through vendors or internal IT Resources.

**Lessons Learned**

- Agile development in short sprints can minimize missteps
- External groups making changes to data that causes problems for queries
- Differentiating the customer perspective from the business perspective is challenging
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