

Data Quality in Utilities – Concepts and Best Practices

Abstract

Data quality is a large and complex field with many dimensions. Every data quality practitioner needs a foundation of concepts, principles, and terminology that are common in quality management. Building upon that foundation, they need to understand how quality management concepts and principles are applied to data, as well as the language and terminology that specifically apply to data quality.

The importance of data quality in the Utility industry is rapidly growing as new use cases for analytics are identified and pursued. Advances in data science and artificial intelligence are providing new opportunities for business improvement and innovation. Processes such as asset management, network operations, cyber security, environmental management, demand forecasting, regulatory compliance, decarbonization, green energy generation and energy storage management are examples of evolving drivers that will benefit significantly from analytics. However, analytics success that enables true business value is heavily dependent on acceptable levels of data quality.

Data quality errors in core operational processes often have severe impacts. Using data for analytics, artificial intelligence, and process automation raises the stakes. Quality control, quality assurance, quality measurement, and quality improvement are proven disciplines for success in manufacturing, services, and other industries. Applying those same disciplines for data management just makes sense.

You Will Learn:

- Basic concepts, principles, and practices of quality management
- General quality management terminology
- Data-specific quality management terminology
- How quality management principles are applied to data
- How big data and analytics influence data quality management

Geared to:

- Business analysts, operations staff and leadership teams who need to understand, measure, monitor, track, and manage data quality
- Data stewards of all types
- Data governance professionals
- Data engineers, application designers, and software developers with goals to build quality into systems
- Managers, data and systems architects, and technical leaders with interest in data quality

Data Quality in Utilities: Concepts and Best Practices Detailed Outline

Module 1 – Quality Basics

- Quality Defined
 - What is Quality?
 - What isn't Quality?
 - Quality vs Qualities
- Quality and Defects
 - Defects
 - Sources of Defects
 - Responding to Defects
 - Process Improvement
- Quality Economics
 - Cost of Quality
 - Cost of Defects
 - Cost of Quality Management

Module 2 – Quality Management

- Quality Management Practices
 - Quality Control
 - Quality Assurance
 - Quality Improvement
 - Shewhart Model
 - FADE Cycle
 - Shewhart/FADE Hybrid
- Quality Management Gurus
- Quality Management Methodologies
 - Statistical Process Control
 - Total Quality Management
 - Six Sigma
 - DMAIC
 - DMADV
 - Related Disciplines
 - Theory of Constraints
 - Lean Management
 - Root Cause Analysis
 - Principles of Root Cause Analysis
 - Ishikawa Diagrams
 - Causal Loop Models
 - Five Why's
 - Business Process Re-Engineering
 - Kaizen
- Measurement and Standards

- Quality Management Systems
- International Standards Organization (ISO)
- ISI 9000
- Common Quality Measures
- Applied Quality Measures

Module 3 – Data Quality Basics

- Data Quality Defined
 - Defect Free
 - Conforming to Specifications
 - Suited to Purpose
 - Meet Customer Expectations
 - Defining Data Quality
 - Qualities of Data
- Data and Purpose
 - Many Purposes for Data
 - Business Transactions
 - Business Reporting
 - Audit Trail
 - Business Measurement
 - Business Analysis
 - Prediction and Forecasting
 - Decision Making
 - Discovery and Learning
- Dimensions of Data Quality
 - Data Quality is Multi-Dimensional
 - Content
 - Structure
 - Time
 - Business
 - Usage
 - Presentation

Module 4 – Data Quality Management

- Data Quality Processes
 - Data Profiling
 - Data Quality Assessment
 - Data Cleansing
- Data Quality Techniques
 - Procedures vs Rules
 - Procedural Data Quality
 - Rule Based Data Quality
- Data Quality Tools and Technology
 - Technology

- DQ Technology
- Data Quality Projects
 - Common DQ Projects
 - Assessment Projects
 - Data Cleansing Projects
 - Process Improvement Projects
- Building in Data Quality
 - DQ and System Architecture
 - DQ and IT Projects
 - Application Development Projects
 - Data Conversion and Migration Projects
 - Data Warehousing Projects
 - Analytics Projects
- Data Quality Organizations
 - Data Governance
 - Data Stewardship
 - Data Quality Programs
 - Data Quality Profession