

THE OPTIMIZATION OF DATA-BASE FRAMEWORK FOR  
CONTROL AND MAINTENANCE OF BOLD DISTRIBUTION  
WATER LTD ACCROSS THE UK.

Created with  
OfficeSuite

## TABLE OF CONTENTS

### Contents

Executive Summary.....	3
The Issue.....	3
Recommendation.....	3
The Business Case Analysis.....	3
The Data.....	3
Database.....	4
Data Kind.....	4
Data Source.....	4
Anticipated Outcomes of data Usage.....	6
Importance of Data in business.....	6
Improve People's Lives.....	6
Get The Results You Want.....	7
Find Solutions To Problems.....	7
Be Strategic In Your Approaches.....	7
Keep Track Of It All.....	7
How to collect and prepare data.....	8
Data Priority.....	8

## Executive Summary

The project work was done for a Bold company Ltd to develop a maintenance structure that can provide maintenance and control of water distribution to various homes across the UK. The opportunity was unique in a way that during this project, the company structure does not have any facility to new development framework. Bold distribution company already have customer base. However, this approach is intent to steady retain customers and attract new customers using sophisticated technology advancement to convince Stakeholders, Project managers, staffs with easy framework to do more with less effort. The database framework will be done using advance database management system give the data model structure to the distribution of water across homes as well as data meter reading system and payment system.

## The Issue

Over 50 million household and non-household consumers in England and Wales. Water shortages are an impending risk for the UK. These services are provided by 32 privately-owned companies in England and Wales. Parts of the country face a significant risk from drought, while neighbouring regions have surplus water. Bold Distribution is facing lack of structural framework to help facilitate good distribution mechanism. Over the past few months, the company have received several calls about

- Shortage of water to homes.
- The topography of water distribution into wrong homes.
- Bill payment problem.
- Unexpected hike price of bills.

## Recommendation

According to the data, Private company extract their source of water from the following places: Surface water (a lake, river, or reservoir), Ground water (an aquifer), Recycled water external icon (also called reused water). In the UK, every homes get their water from water supplier companies. To make sure water from these systems is safe to drink, there should always be a monitoring system which check the safety of the water and before distribution is taken place. This act is referred to as the PH value which differentiate the acidity from the alkalinity from the ground water level to their reservoir or storage distribution facility.

Using the sophisticated advancement, BWDMS will have easy process by which:

- Employees will function systematically with one another across all fields.
- Information amongst peers will be fast, and more assessable which will save time and energy always.
- Customer communication will be more effective, descriptive and precise always.

The data which will be provided in Chapter 2.0, the implementation using the requirement will be beneficial across homes in the U.K.

## The Business Case Analysis

### The Data

At this stage, the database structure will be the major achievement which will provide good beneficial company structure to access water distribution across the UK. The distribution be monitored, controlled, and maintain consistent checks and water flow, using valid data and point base location structure of a process mapping.

This project cycle will be done using the waterfall methodology, The project live cycle consists of the following process.

- Initiation
- Requirement Analysis
- Design
- Development
- Testing
- Implementation

The team for the database structure consist of a 12 Member. Structure constitutes of 2 members each. A database will provide a design mapping to it value of the company.

## Database

Database in water distribution company can be explained as the application and evaluation of a surveyed water process from the manufacturer to the customers or homes across the UK.

There are two types of database

- Relational
- Non-relation.

For the Bold Distribution company, the database structure will be mapped using the relational system. The kind of data to be collected will be the device which monitor and regulate area mapped issues of water default, water leaked from pipes, monthly pipe system check, area of water pressure, sewage mixture to clean water and other water maintenance structure.

## Data Kind

As a case study, data from Halsnæs Forsyning will be used for bold distribution Ltd. The WDN (Water Development network) has been sectioned into 27 different district metered areas (DMAs) that mainly consist of domestic households. Majority of these DMAs has a data logger installed at the inlet and/or outlet of the zone, so the water consumption either can be measured or computed. To be able to show and analyse results from the individual zones, an Analysis Water Supply Data (AWSD) Excel Tool has been created that can do a simple pre-analysis of the obtained data from the water distribution network.

## Data Source

BDC (Bold Distribution Company) Excel Tool has been programmed in VBA to establish a connection between a SQL-database and Excel. In the SQL database, different parameters, such as flow or pressure, different logging intervals, such as minute-by-minute or hourly logs and different periods of logging have been stored for data loggers in a WDN (Water distribution network). The BDC Excel Tool has been sectioned into three sheets to make it clear to the user where to generate and where to insert data. The first sheet, Initialization, is used to establish a connection between a linked database and Excel.

## How to collect and prepare data

Here, the user is capable to generate different plots of the logged data for DMAs. In the third sheet, SCADA Time Check, the user has to insert additional information for the installed loggers of the analysed WDN. The following sections will go into detail how the sheet functions and explain the underlying code.

Sheet 1 “Initialization”: Here the specific database properties have to be entered, such as database name, driver, provider, etc. This is essential, because server name, user id and password will likely differ for each user of the Excel Tool

Sheet 2 “Generate data”: This is the main sheet of the Excel Tool. However, it has some restrictions: It is only possible to analyse up to 27 DMAs in total and the user has to insert data logger information from the analysed network. For each DMA, the user needs to insert the logger name that measures the inflow to a zone. Moreover, the names of outflow loggers, connected to a DMA, have to be inserted, so a mass balance can be generated. In this case, it is only possible to enter a maximum number of 4 outflow loggers. This means, if a DMA contains more than 4 outgoing data loggers, it is not possible to make a valid water balance

Sheet 3 “SCADA Time Check”: Each data logger being connected to a DMA can have different log intervals. These have to be entered in this sheet. For example, if a data logger logs in a 60-min interval and later in a 1-min interval, both logging periods have to be entered. Also, if only one logging period exists.

## Anticipated Outcomes of data Usage

The expression of Business outcomes are key, Bold business objectives is a progressive Platform which will use it data when structurally designed. It aims of achievement will go beyond expected outcomes and productivity among the company organisations. These outcomes are likely tied to a company's strategic objectives and heavily influenced by what customers experience and feel as they interact with the organization. Bold Water Distribution Data Management can be used to map water distribution assets, edit data, view system maps in the field and office, view asset reports, and collaborate with map notes.

The overall object of this tool can be sectioned into three aims: 1) to generate a simple plot of the (raw) measured data from each logger and zone; (2) to aggregate/extend the logs to a user-defined interval and generate a plot based on this interval; and (3) to compute the mean weekly water consumption over a given period

Business outcomes might include, for example:

- A new sales target.
- A customer retention objective.
- An efficiency in water distribution across homes
- Easy water bill payment system.

- Easy spot on / tracking of water leakage of pipes.
- Efficient field tracking water pipes.
- Consistent interactions across all staff members both (field staff and desk staff)

## Importance of Data in business

The list below shares six reasons why data is important, what you can do with it, and how it relates to the human services field for the Bold Distribution Water Ltd. This reasons should be shared across team members and stakeholders.

- **Improve People's Lives**

Data will help you to improve quality of life for people you support: Improving quality is first and foremost among the reasons why organizations should be using data. By allowing you to measure and take action, an effective data system can enable your organization to improve the quality of people's lives.

- **Get The Results You Want**

Data allows organizations to measure the effectiveness of a given strategy: When strategies are put into place to overcome a challenge, collecting data will allow you to determine how well your solution is performing, and whether or not your approach needs to be tweaked or changed over the long-term.

- **Find Solutions To Problems**

Data allows organizations to more effectively determine the cause of problems. Data allows organizations to visualize relationships between what is happening in different locations, departments, and systems. If the number of medication errors has gone up, is there an issue such as staff turnover or vacancy rates that may suggest a cause? Looking at these data points side-by-side allows us to develop more accurate theories, and put into place more effective solutions.

- **Be Strategic In Your Approaches**

Data increases efficiency. Effective data collection and analysis will allow you to direct scarce resources where they are most needed. If an increase in significant incidents is noted in a particular service area, this data can be dissected further to determine whether the increase is widespread or isolated to a particular site. If the issue is isolated, training, staffing, or other resources can be deployed precisely where they are needed, as opposed to system-wide. Data will also support organizations to determine which areas should take priority over others.

- Keep Track Of It All

Good data allows organizations to establish baselines, benchmarks, and goals to keep moving forward. Because data allows you to measure, you will be able to establish baselines, find benchmarks and set performance goals. A baseline is what a certain area looks like before a particular solution is implemented. Benchmarks establish where others are at in a similar demographic, such as Personal Outcome Measures national data. Collecting data will allow your organization to set goals for performance and celebrate your successes when they are achieved.

- Access The Resources Around You

Your organization probably already has most of the data and expertise you need to begin analysis. Your HR office probably already tracks data regarding your staff. You are probably already reporting data regarding incidents to your state oversight agency. You probably have at least one person in your organization who has experience with Excel. But, if you don't do any of these things, there is still hope! There are lots of free resources online that can get you started. Do a web search for "how to analyze data" or "how to make a chart in Excel."