# Configuration and Service Tool Development for Flow and Density Meters

## Problem Statement

The client is a Fortune 500 electrical equipment OEM catering to process industries with its wide range of fluid and gas measurement solutions. The client's particular series of flow and density meters required the complex configuration and calibration to be performed manually. Given the large number of liquid and gas measuring meters present in hazardous environments, inspecting each device manually was too time-consuming and unsafe. Also, the flow and density meters supported limited protocols, making it difficult to access device diagnostics data and assess the failures timely, hence, the impacting customer experience. Therefore, the client was looking for a solution to digitalize and automate the maintenance process.

## Challenges

- High maintenance cost due to recurring manual configuration and calibration episodes
- Limited protocols support causing service personnel to use separate proprietary software tools
- Manual logging of device diagnostics was prone to human errors
- Difficult to perform maintenance checks of devices installed in remote and hazardous areas

## Solution

Utthunga offered to develop a centralized configuration application in two phases to address the above prevailing challenges.

**Phase I:** The 1st phase of the solution included developing Windows-based application for desktops. The application consisted of:

- XML configuration files to support easy device feature re-usability, upgraded versions of same device, etc.
- Plug-in based architecture with different set of interfaces to support new protocols
- Smart Controls that can be created dynamically on need-basis
- HART, Modbus RTU, and Modbus TCP communication protocols support
- Simulation and offline support to test the live transmitters Intuitive graphical controls (using WPF) to determine run time behavior of process variables

**Phase II:** In the 2nd phase of the solution, we developed a mobile application. Along with all the above features, the application also consisted of:

- Mobile and tablet screen-friendly user interface (UI/UX) with comprehensive snapshot of devices' health
- Cross-platform compatibility for both iOS and Android (mobiles and tablets)



## Benefits

Some of the benefits derived from the solution were:

- Close to 20% reduction in man-hours for maintenance
- Easy configuration and calibration through single application supporting multiple protocols
- Substantial decrease in unplanned meter failures with automated alert generations
- Mobile application allowing tracking device health on the go
- Complete stat summary and live device data direct on the mobile/tablet screen