Case Study

SOLUTION AREA: . . . . App Modernisation
SOLUTION PLAY:. . . . . Modernising Apps with Azure
and Azure AI & IoT Devices
TECHNICAL: . . . . Arduino Studio, MQTT, Azure

INDUSTRY: . . . **Financial Services**
REGION: . . . . . South Africa
REACH: . . . . . . Global

Overview

By building a bespoke cloud monitoring device to make offline inverters "smart", First Technology delivered an innovative IoT and AI solution to a well-established financial services client.

Relying on a remote call centre work force, our client needed to equip agents with redundant power in their home offices. In order to give our client real-time insight into the health of the home inverters, a custom device that can be retro-fitted to existing 12/24V inverters was developed and deployed by First Technology.

By consolidating the data in a cloud reporting platform, generative AI is used to produce insights that can be integrated to the existing endpoint management platform, and to predict maintenance schedules and report on the health of the inverter batteries.
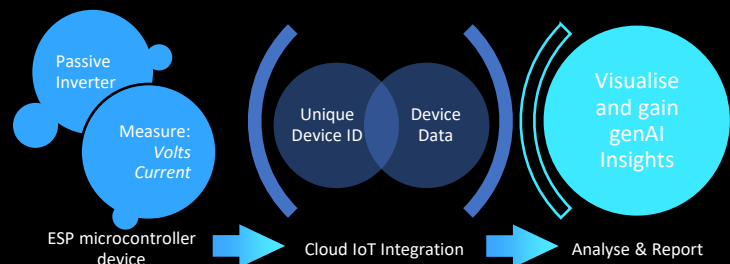
Approach

Working closely with our financial services client, First Technology identified the need to bring the health and status of home inverters into our client's view. We developed a bespoke, low-cost IoT device, that can be fitted to most home and home-office inverters.

Using a design that require minimal physical intrusion, the device reads the battery voltage (and optionally the current) from the inverter and sends the data to a cloud reporting platform on a regular interval. By analysing the fluctuations in battery voltage and current, the following insights are derived:

- **Home-office power status**: By comparing electricity interruption schedules, the operational status of the inverter can be compared with expected outages in the area.
- **Single view:** By combining the health and status of the inverter, our client has a single view of the agent's home equipment inventory.
- **Health and maintenance:** Looking at the charge and discharge patterns of the inverter battery, the current health of the battery can be determined and compared against the expected maintenance schedule of the inverter.

A crucial element of the project was for a proof of concept for a larger roll-out. By designing a low-cost ESP microcontroller-based solution, the solution can be retrofitted to most home and home-office type inverter, giving visibility of the health of inverter.

Passive Inverter
Measure: *Volts Current*
ESP microcontroller device

Unique Device ID
Device Data
Cloud IoT Integration

Visualise and gain genAI Insights
Analyse & Report

Collating the data via a cloud ingestion framework, generative AI is used to derive insights into the inverters, including the ability to identify outliers and usage trends.

Summary and Benefits

First Technology and their client developed a IoT inverter monitoring solution. The benefits of the solution:

- Gives cloud-based visibility of status and health of home inverters
- Designed to be easy retrofitted to existing home-office inverters
- Offer a cloud reporting platform and uses generative AI to derive insights into the health of inverters, and to detect and highlight outliers in the data points

First Technology
Group
AI SOLUTIONS

First Technology delivers expert IT solutions with deep industry experience, empowering businesses through advanced infrastructure, cloud, security, and managed services tailored to the evolving digital landscape. First Technology Digital is a specialist Innovation and generative AI division of the group.