Microsoft Azure based cloud platform for monitoring and controlling industrial systems

01 BUSINESS REQUIREMENT:

- Modbus inputs/outputs, TCP/IP Sockets, BLE/WiFi, 4G
- Real time data processing, Controls, Alarm/Failsafe, OTA
- Security on Edge gateway and secured communication with cloud
- Web server/ mobile based application for device setup, diagnostics

02 OUR SOLUTION:

- ARM/ x86 based Off-the-self hardware
- Data acquisition, Control logic, Alarm generation, Failsafe handling, OTA firmware updates implemented in Azure IoT Edge module.
- Security – Secure boot, File system encryption, Encrypted database, TPM chip (keys), X.509 certificate based device provisioning.
- Inbuilt Webserver/ Mobile App for device provisioning, diagnostics and local debugging.

03 TOOLS /TECHNOLOGIES:

- Visual studio 2019, Linux
- Wi-Fi Hostspot/SoftAP, GPS, BLE 5.0, 4G
- WebSocket, IoT Edge Module in C#, Stream analytics, Blob Storage, Azure C2D /D2C,
- Ubuntu 18.04 with Linux kernel 4.9 , Yocto Dunfell 3.1 with Linux kernel 5.4
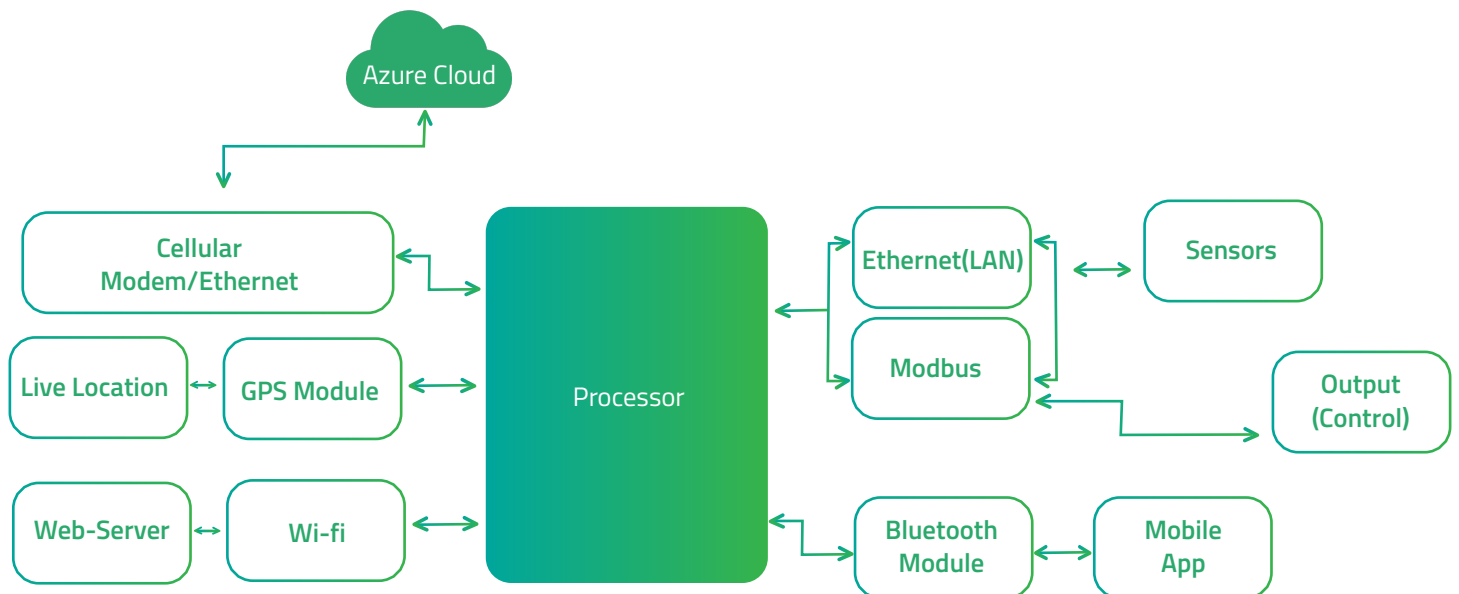
04 BUSINESS IMPACT

Ability to monitor, analyze and optimize the performance of the industrial processes thereby enhancing plant efficiency

The solution provides a good user experience by streamlining the process flow, automating device provisioning and firmware/configuration update with limited manual intervention.

Foolproof design - meets all the Edge security and cybersecurity requirements

Azure Cloud

Cellular Modem/Ethernet

Live Location — GPS Module

Web-Server — Wi-fi

Processor

Ethernet(LAN) — Sensors

Modbus

Output (Control)

Bluetooth Module — Mobile App

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