



TVA PQ Project Update

Presented by Tony Murphy

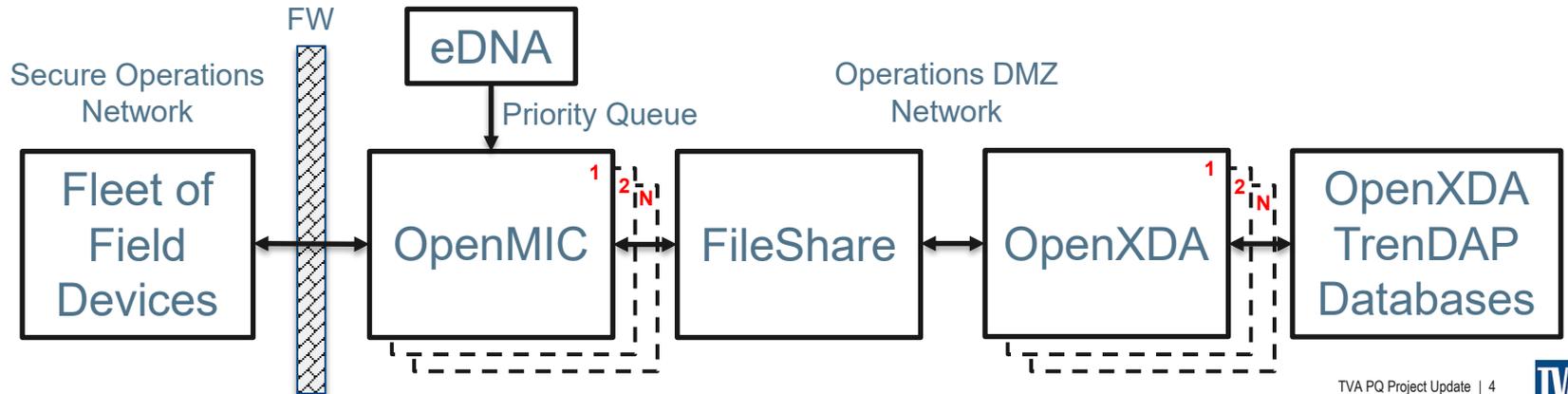
5/12/2021

Issues Project is Addressing:

- 1) Multi-Vendor, Proprietary & Licensable Tools
- 2) Large Scale
- 3) High Availability & Performance
- 4) Validity of Analysis
- 5) Device Management & Work Flow
- 6) Configuration Control
- 7) Model Flexibility
- 8) Integration with Other Systems
- 9) Asset Health
- 10) Customer Solutions

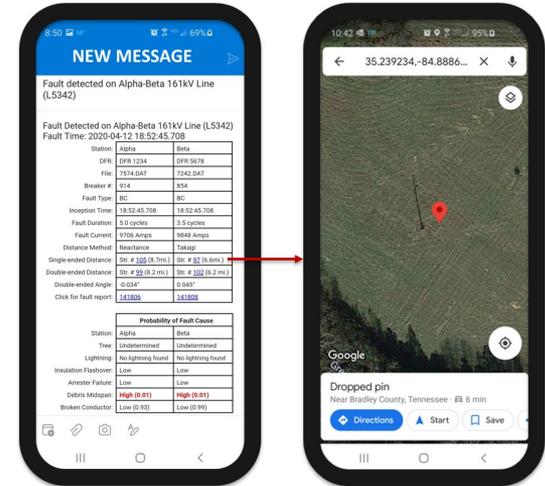
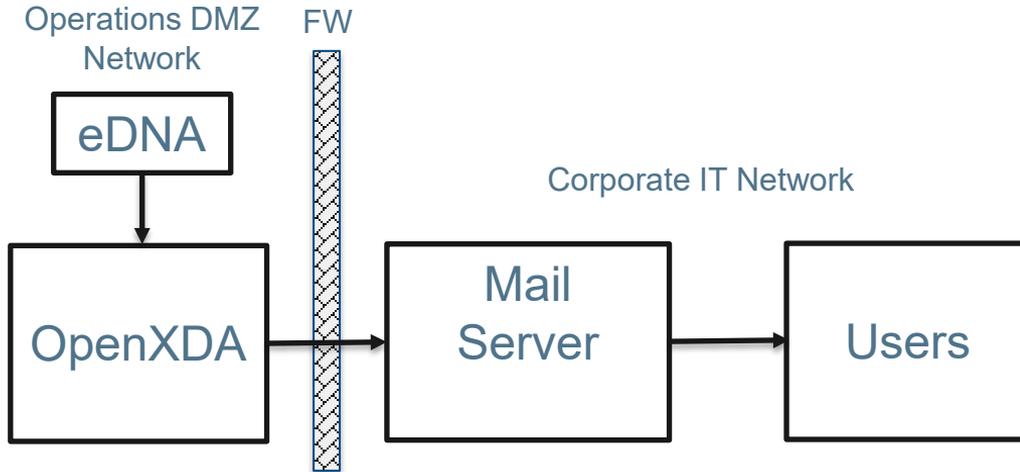
Large Scale / High Availability & Performance

- P: The fleet of field devices has grown to where today we are polling thousands of devices and automating processing of the data in near real-time. The number of users who are subscribed to the automated notifications has also grown into the hundreds.
- S: Develop multinode instances of OpenMIC and OpenXDA with the ability to coordinate and share load and provide failover capability. Integrate with SCADA Historian to enable priority queueing.



Validity

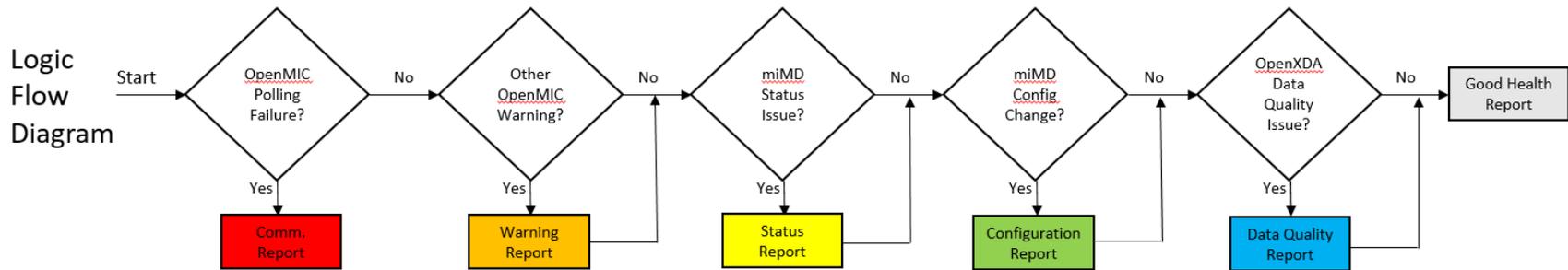
- P: Since real-time operators and field maintenance personnel now rely on the automated fault notifications for intelligence in restoring the system after interruptions, timely accurate notifications are essential.
- S: Integrate OpenXDA with SCADA Historian to verify breaker operations on lines before sending automated fault notifications. Develop probable fault cause logic within OpenXDA.



Device Management & Work Flow

P: Managing a fleet of thousands of field devices, ensuring that they are properly configured, online, in good health, downloading, and having quality data is a monumental task.

S: Develop a central display to monitor and track meter health and status and work flow resolution. This incorporates info from OpenMIC, miMD, and OpenXDA. It links to other enterprise systems so that within a few mouse clicks all necessary info can be quickly seen.



Configuration Control

- P: Configuration Control of a large fleet of field devices can be overwhelming. With growing PRC-002 requirements this becomes even more critical.
- S: Develop miMD (Maintenance & Diagnostics) application to track and report changes in device configuration and alert to alarms in device diagnostic or status files. Further PRC-002 Compliance reporting was also added.

From: powerquality@tva.gov <powerquality@tva.gov>
Sent: Monday, May 10, 2021 03:01 AM
To: Power Quality <PowerQuality@tva.gov>
Subject: Configuration File Changes

Attention!!

The following Configuration files have changed in the last 24 hrs.

Lowndes MS 1

File	Time	# of Changes	URL
CHANNELS.INI	2021-05-09T09:14:17.373	85	Link
FTX.INI	2021-05-09T04:54:16.747	1	Link

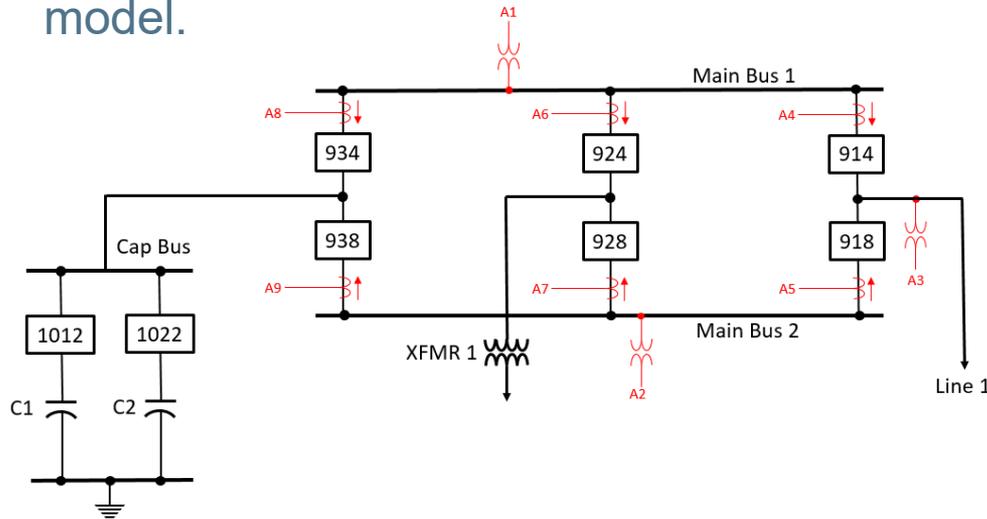
FTX.INI

```
POSTFAULT_CYCLES=60
DISPLAY_PREFAULT_CYCLES=15
SAMPLE_RATE=5760
BASIC_FREQUENCY=60
DISPLAY_FORMAT=6
BOARD1_ANALOG_CHANNELS=32
BOARD2_ANALOG_CHANNELS=0
EVENT_GROUPS=2
FAX_IDENTIFIER=DIRECTORDFR
CHANNEL_OFFSET=2
SAMPLE_RATE_DIVISOR=1
FREQUENCY_AVERAGE_COUNT=3
FREQUENCY_AMPLITUDE_THRESHOLD=4020
FIFO_BUFFER_SIZE=13107200
```

Model Flexibility

P: Earlier versions of OpenXDA were based upon a line centric model and primarily used for automatic detection, location and analysis of faults on transmission or distribution lines. With the emphasis on asset health & incipient failure detection an asset centric model was needed.

S: Develop new version of OpenXDA that is based upon an asset centric model.



- Map Channels to Primary Asset or Assets
- Add Connections Between Assets

Integration with Other Systems

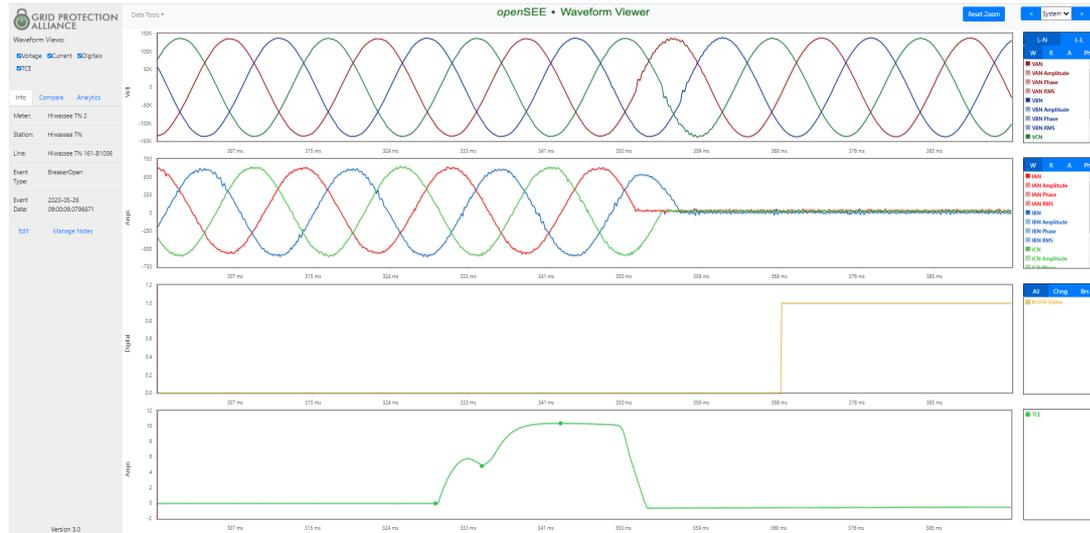
- P: In order to maximize the potential for automation of analytics, integration of OpenXDA with other enterprise systems like Planning Models, Asset Management Systems, SCADA Historians, GIS Databases, Outage Coordination Systems, Meter Management Databases, etc. is needed.
- S: Develop a structured and easy way to integrate with other enterprise systems through primary keys in System Center.



Asset Health

- P: There is a growing focus on using waveform event and trend data for asset health and incipient failure detection via near real-time automation.
- S: Develop asset health analytics and alerts within OpenXDA. Develop asset health reports within SE Browser.

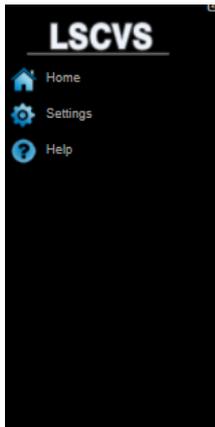
Breaker Trip-Coil Analysis



Customer Solutions

P: Customers expect high reliability and power quality from the utility. They also desire high quality customer service.

S: Automate customer focused KPI reports to track PQ performance. Develop the PQDigest web application for customers to view and use PQ data from devices at their sites. Integrate OpenXDA with the EPRI hosted PQ Investigator to include PQI info in the automatic notifications and analysis.



Home - Business Indicator For Large Customer Voltage Sag

