Interfacing Remote Clean Water Act Monitoring of **Environmental Compliance** Instruments with Informatics **Platforms with Quality Control Challenge Points**

Presented By

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WHAT DO I WANT?

I Want The Following

- A remote instrument that determines an analyte value
- I want the data transferred to my data control system:
 - LIMS
 - SCADA
- I want the data to meet EPA and State regulatory requirements.
- I want the data to be:
 - Accurate
 - Precise
 - Reliable

Reliability????

Online Instrument Data Reliability

Data must:

- Be uncorrupted from the source instrument to the data management system.
- Be stored in a format that can be retransmitted if corruption is suspected.
- Be in a format that can be audited by regulatory agencies.

So How Is My Data Handled???

Framing

- Framing is referred to the number of data bits to be sent from transmitter to receiver.
- The number of data bits differs in case of application.
- Most of the application uses 8 bits as the standard data bits but it can be selected as 5, 6 or 7 bits also.

Framing of Data

Framing is a point-to-point connection between two computers or devices consists of a wire in which data is transmitted as a stream of bits. However, these bits must be framed into discernible blocks of information. Framing is a function of the data link layer.

What is framing and types of framing?

- Framing can be of two types, fixed sized framing and variable sized framing.
- If the size of the frame is fixed then the frame length acts as delimiter of the frame.
 - Consequently, it does not require additional boundary bits to identify the start and end of the frame

Problems to Consider

- Receiver or destination does not receive correct data-frame and sender or source does not even know anything about any such loss regarding data frames.
- Therefore, in such type of cases, both sender and receiver must be provided with some essential protocols that are required to detect or identify such type of errors like loss of data frames.

What Does This Mean For Online Instruments

- An elastic transfer can be performed over a wide range of transfer rates, and the rate can even vary over the duration of the transfer.
- The application cannot tolerate data loss.
- This does not mean, however, that the network cannot lose any data. Packets can be lost in the network (owing to uncorrectable transmission errors or buffer overflows)
- Provided that the lost packets are recovered by an <u>automatic retransmission procedure</u>.

Example



So, Now What Do You Expect Of Your :

Instrument Data Transfer System Twisted Pair • PLC Cell Phone LIMS SCADA FTC.

Questions More On Thursday in Lem Walker's Session