OSIsoft® USERS CONFERENCE 2011

Turning **insight** into **action**.

Nalco's Journey through Wireless Data Collection Using Windows Mobile Devices

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Agenda

- Overview of Nalco and our business approach

- Overview of our data solution

- What data we collect and the challenges

- How we use the PI Manual Logger Product

- Future directions

Nalco Company:
Essential Expertise for Water, Energy, and Air^{SM}

- World's leading process improvement company

- 70,000 customers in more than 130 countries

- 75 years of experience in the hydrocarbon industries

Nalco and the Oil & Gas Challenge

- Refining margins are slimmer than ever
- Refineries run off of design capacity
- Refineries must go years without a shutdown

Nalco provides specialty chemical treatments and services that aid in processing and protect assets so refineries can run more efficiently and keep running longer without a shutdown

Nalco's Approach

1. **Understand the System**
    –   "Best Practice" Audits
    –   MOC Audits

2. **Apply "Best-In-Class" Technology**
    –   Chemistry
    –   Control
    –   Monitoring

3. **Document and Communicate Value**
    –   Data Management and Interpretation
    –   Turning Data into Customer Value
    –   Communicating Value to our Customers

Nalco's Approach

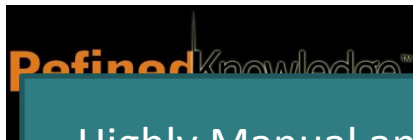1. **Understand the System**
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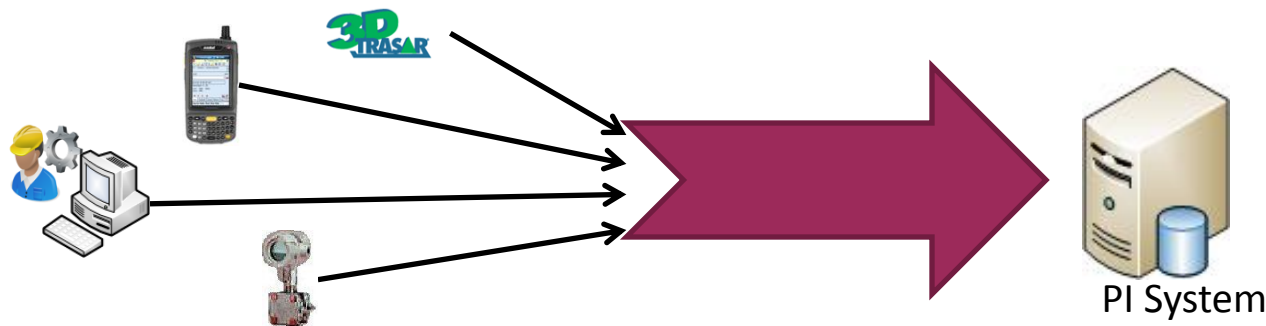
Highly Manual and Time-Consuming

Nalco's Refined Knowledge Solution

- Collect and organize data from many sources into one system
- Build in expert insight and best practices across the business
- Provide Nalco reps and experts as well as our customers a constant and meaningful view into the information.

Turning Data into Actionable Knowledge

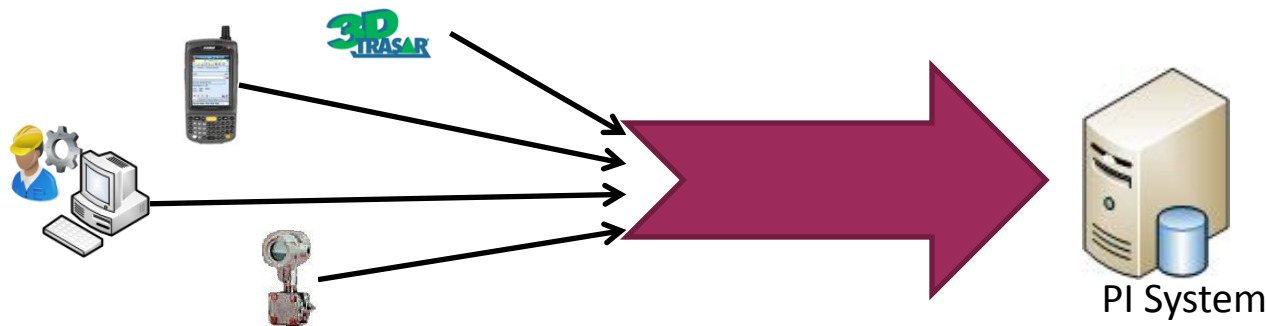# Multiple Sources of Data

- Online process measurements

- Nalco packaged control and monitoring solutions

- Laboratory results in LIMS

- Field observed values and local readings

- Field wet chemistry testing
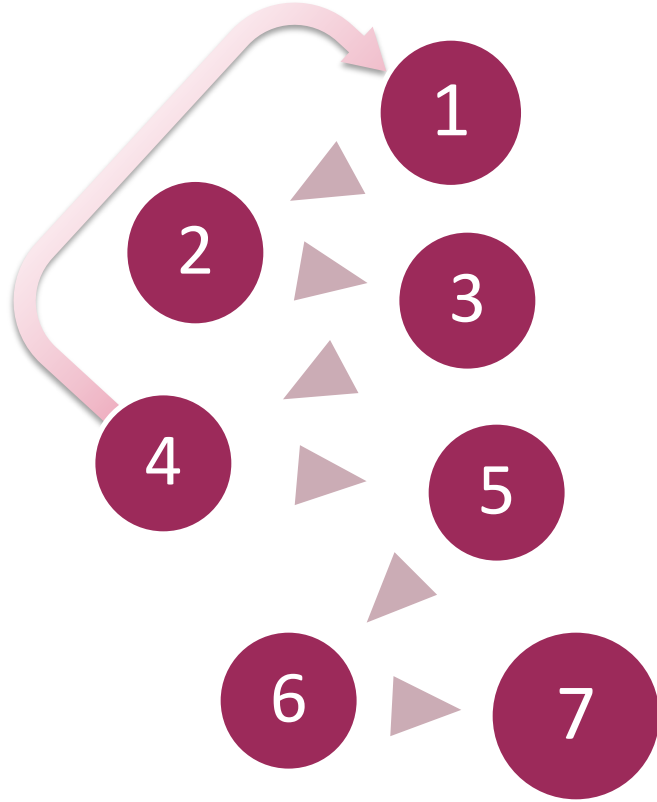

PI System

Multiple Sources of Data

- Online process measurements
- Nalco packaged control and monitoring solutions
- Laboratory results in LIMS
- Field observed values and local readings
- Field wet chemistry testing

Majority of the Data!!!

PI System

"Old" Data collection Process

- Highly Manual Process

- Data Gathered From Many Data Sources

- Multiple Locations

- Time Consuming

Requirements and Challenges

- Embedded sales force – No access to Nalco VPN

- Explosive atmosphere

- Lots of data manually collected

- Instant error checking as data is collected

- Quick, efficient and reliable data entry

- Approval of data requires workflow signoff
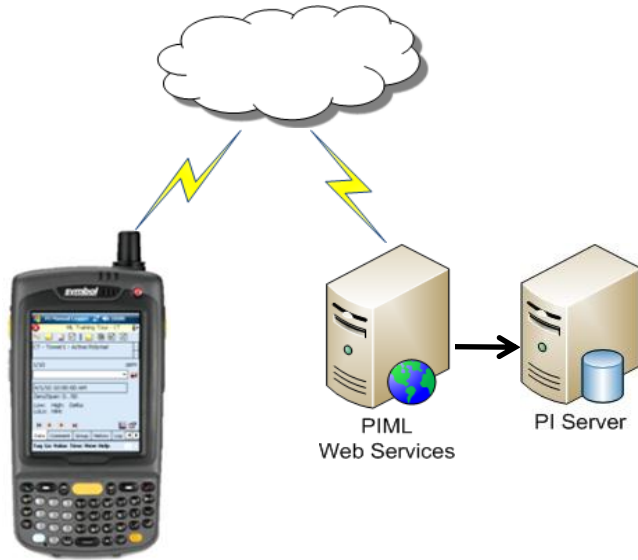
"New" Data Collection Process

1. Go to unit, enter local readings, collect water and process samples

2. Take samples to field lab, perform tests, enter test results, retesting samples as prompted by the application.

3. Replicate data while in the field

4. Supervisor approves data values writing to PI System.

5. Review auto generated report with customer and discuss actions to be taken.
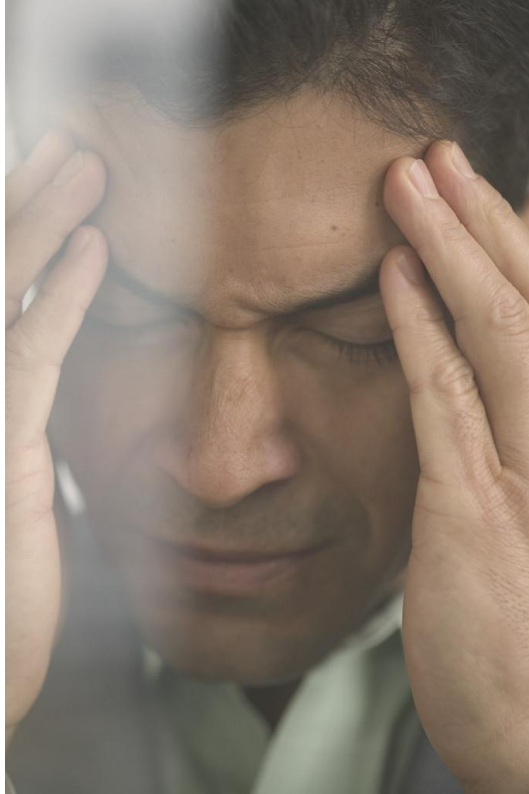
Key Functionality to Solve Challenges

- Embedded sales force – No access to Nalco VPN

- Explosive atmosphere

- Lots of data manually collected

- Instant error checking as data is collected

- Approval of data requires workflow signoff

- Wireless data transfer

- Windows Mobile based Devices

- Ability to organize data collection in tours and order tags into groups.

- Pop-up instructions and instant data validation and feedback

- Data approval through PI Manual Logger Windows Client

Wireless Data Transfer

PIML
Web Services

PI Server

- Unable to use Active Sync for replicating handheld
- Replicate tour data as well as configuration information through wireless connection
- Manage devices at a number of different sites through one central system.
- Secure connection through the internet to web services machine
- Remote access to PI Manual Logger Client tool

Key Pain Points

- Totally disconnected environment
- Large number of tours means large data sets and tour definitions to update over cellular connection
- Initial tour configuration and any updates are a manual operation
- Can't add new tours through wireless replication
- Secure data transfer through the internet
- Cell coverage in refineries

Key Pain Points – Some Solutions

- Totally disconnected environment → Remote management and web tools
- Large number of tours means large data sets and tour definitions to update over cellular connection → Updates by exception
- Initial tour configuration and any updates are a manual operation → Bulk Tour load through xml
- Can't add new tours through wireless replication → Added functionality
- Secure data transfer through the internet → Static IP data connection with VPN
- Cell coverage in refineries → ???

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Summary

- Large scale manual data collection system
  - Multiple Units with lots of data
  - Multiple locations
- Disconnected environment
- Implementation of PI Manual Logger
  - Windows Mobile based Class I Division 2 handhelds
  - Data and tour Replication through web services and secure cellular data connection
- Extensive use of web based and remote management tools

Make data collection simple, fast, and error free

Where do we go from here?

- Test and deploy newer versions of PI Manual Logger software as available
  - Increased replication speed and functionality
  - Faster initial tour setup and updating process
- Automation of software deployment, tour definition and application building
- Work toward true cell phone type activation of new handhelds

Thank you

Turning **insight** into **action**.