



*Setting the Standard for Automation™*

# Mobile Devices for SCADA Integration and Beyond: Considerations, Security and Applications

Speakers:

Pavol Segedy and Brandon Erndt

Standards  
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- Pavol Segedy

- Over 8 years of experience in the design and implementation of electrical and control systems for water, wastewater and pump station facilities.
- Expert in design, specification and startup of plant instrumentation
- Provides support and troubleshooting services to resolve issues in established plants and/or systems.
- Programming Leader for Mid-Atlantic region.



- Brandon Erndt, PE

- 17 years of experience as a controls engineer, project manager, and programming department manager
- Programmable logic controller (PLC) programmer and Human-Machine Interfaces (HMI) software developer.
- Responsible for developing several vendor software programs.



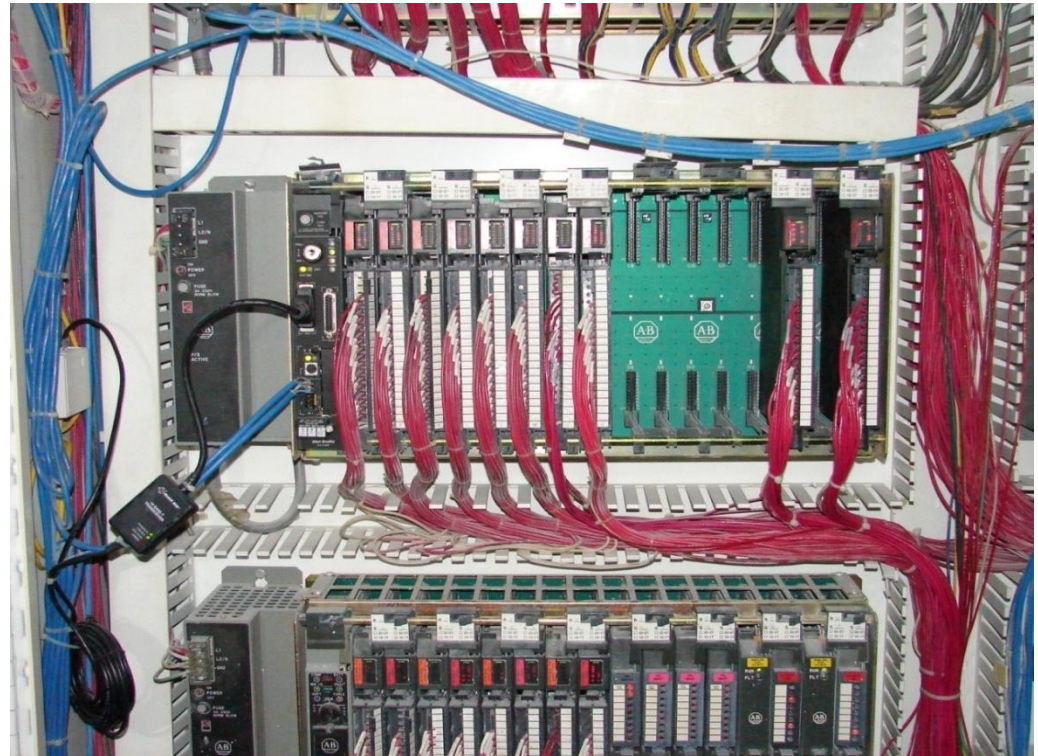
**Brown** AND  
**Caldwell**

- Overview of SCADA (Industrial Control Networks)
  - New Role of SCADA in Water/Wastewater Industry – Data Hub
- Introduction to communications options
  - Technologies
  - Configurations
  - Security
- Introduction to Mobile Solutions – different applications for different client needs
- Live Demos
  - Remote Desktop – Visualizing the SCADA system
  - Real Time access to Control System
  - Mobile Reporting

# Background – Industrial Control Systems



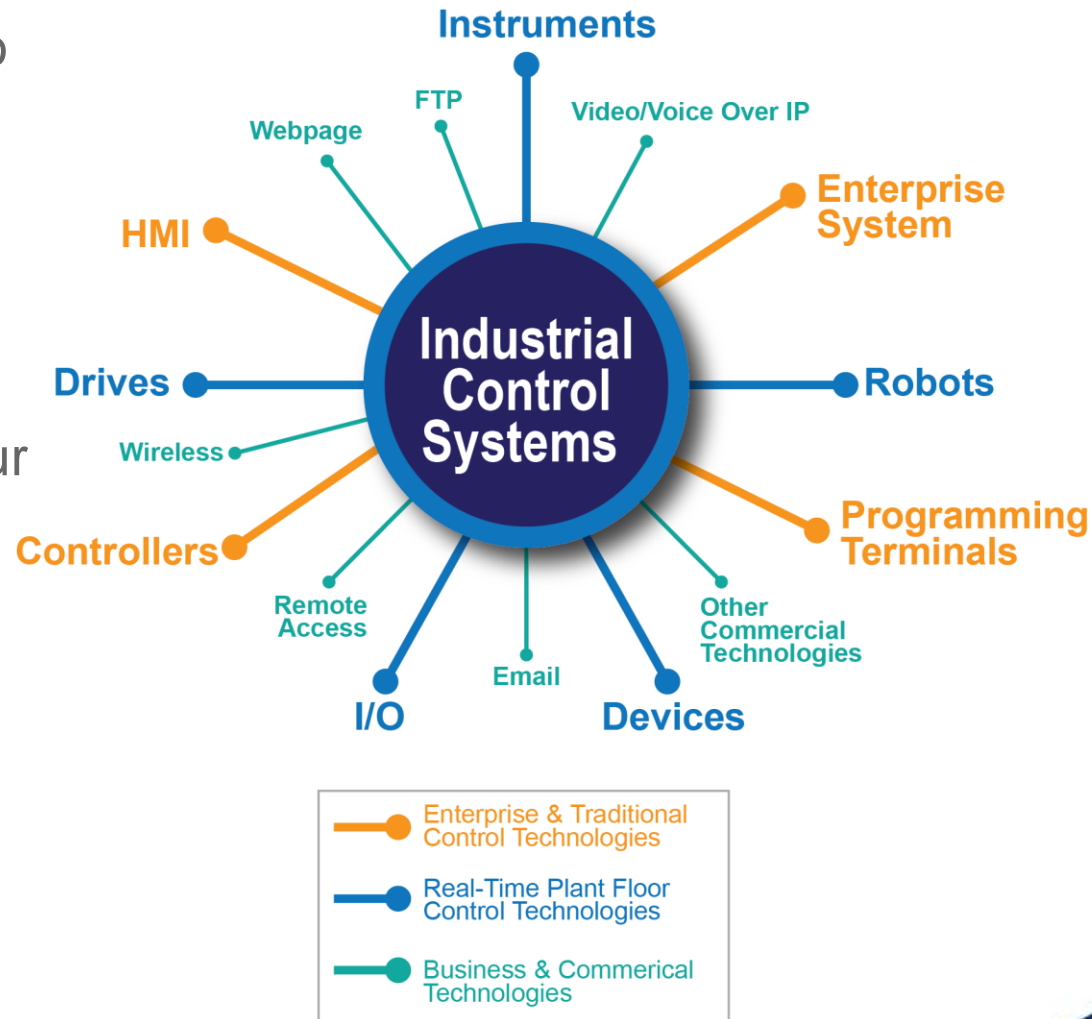
- Proprietary networks
- Hard to interface between networks
- Closed communication networks
- Challenging to integrate with other systems



# Current Configuration– ICS

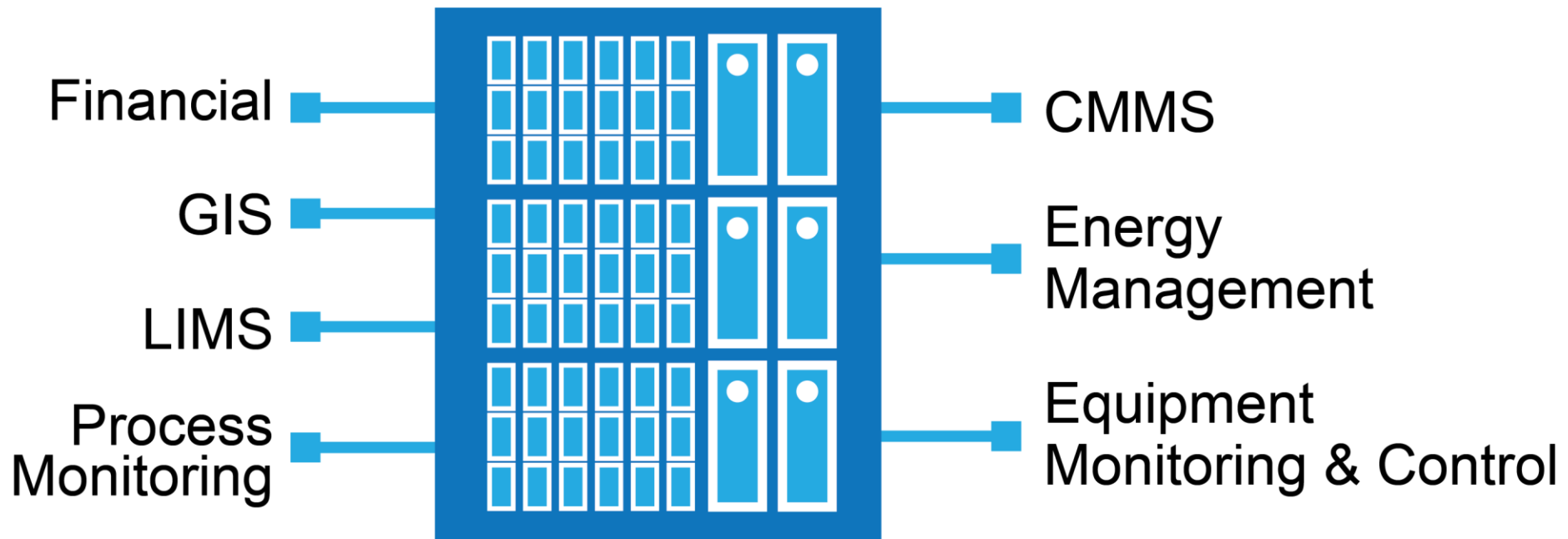


- Last 10 years – migration to open communications (i.e. Ethernet)
- Physical connection to Control Systems for Ethernet is the same as your PC even if the protocol is slightly different (Ethernet IP, Modbus TCP/IP, etc)



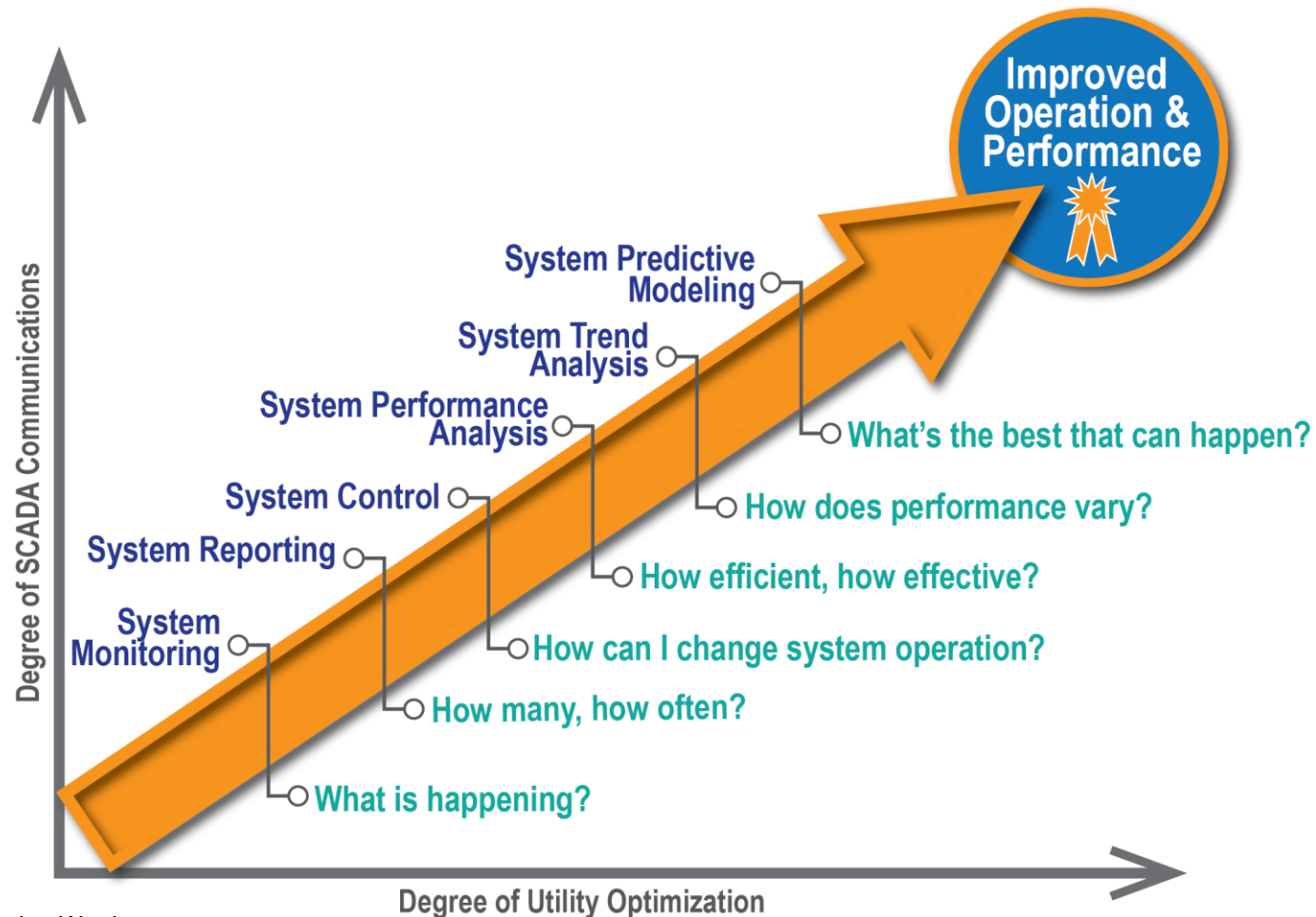
- Collaborative environment between control systems and IT
- “Getting on the same page”

## SCADA System





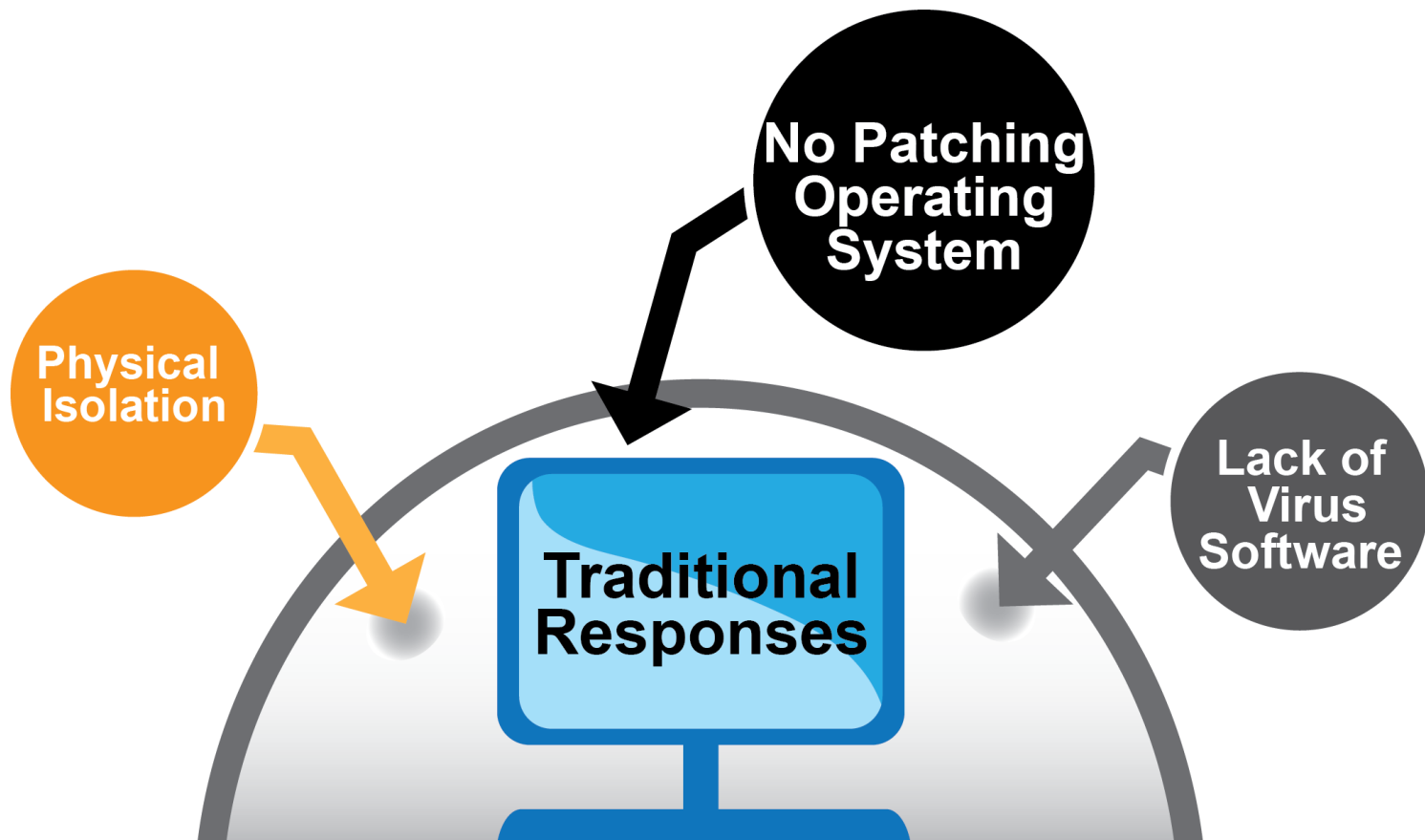
Communication Solution = **How far do you want to go?**



# Security Considerations

## Traditional Responses - ICS

Traditional responses to SCADA security  
(and why they no longer work in the age of Mobility)



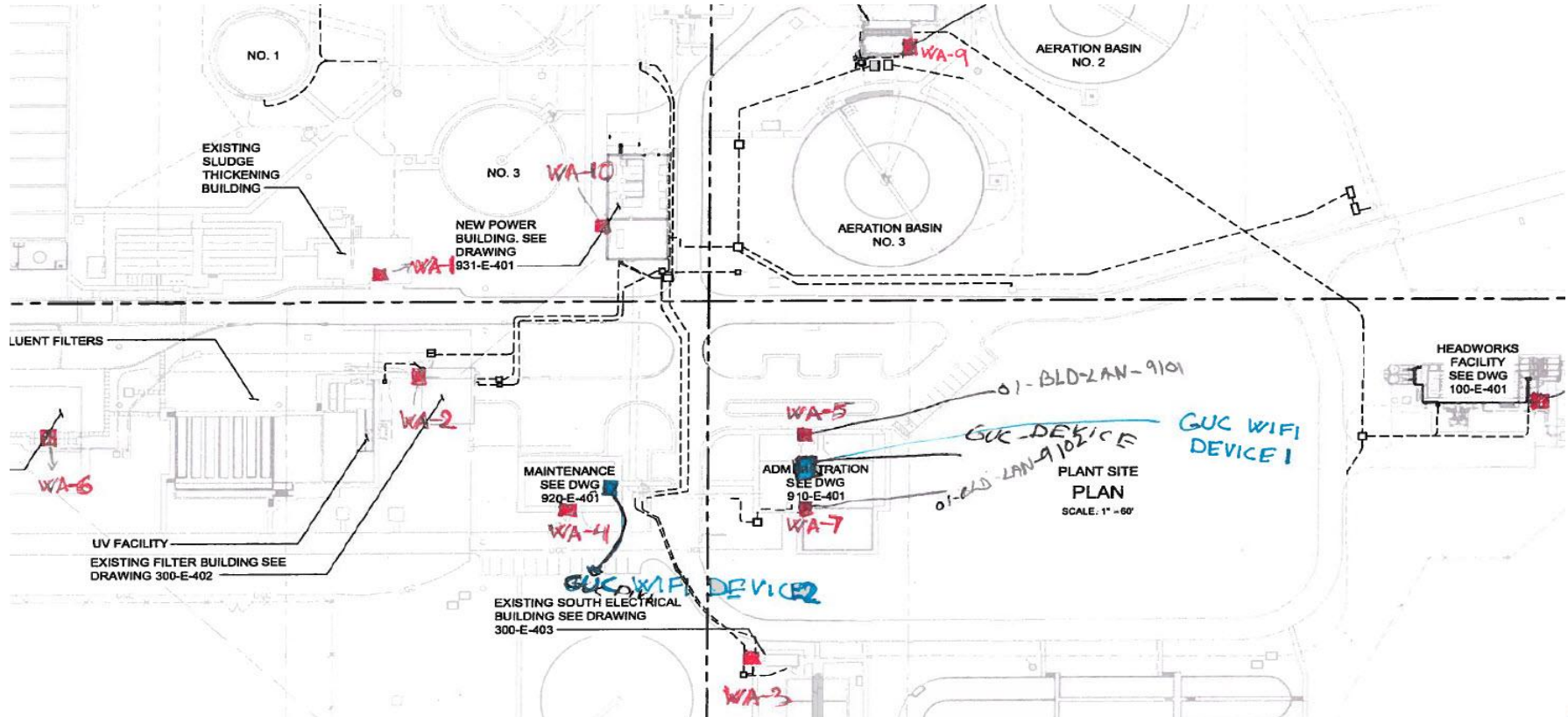


- Most Common – VPN (Virtual Private Network)
  - Work with your IT staff but understand the difference between City WAN and Industrial Control Network
- Local Wi-Fi
  - Dedicated Security for the Local Wi-Fi network
    - Change Defaults – includes changing SSID and passwords
    - Disable SSID (Service Set Identifier) Broadcast
      - Does not offer protection against determined intruders
    - MAC Access Control – MAC filtering
    - Activate Encryption - built in Wireless encryption
      - WEP (Wired Equivalent Privacy) 64- or 128-bit encryption
      - WPA-PSK [TKIP] (Wi-Fi Protected Access with Pre-Shared Key with TKIP (Temporal Key Integrity Protocol) encryption type (IEEE 802.11i)
      - WPA-PSK [AES] (Wi-Fi Protected Access with Pre-Shared Key version 2 with AES (Advanced Encryption Standard) encryption type
      - WPA-PSK [TKIP] + WPA-PSK[AES] allow both encryption types

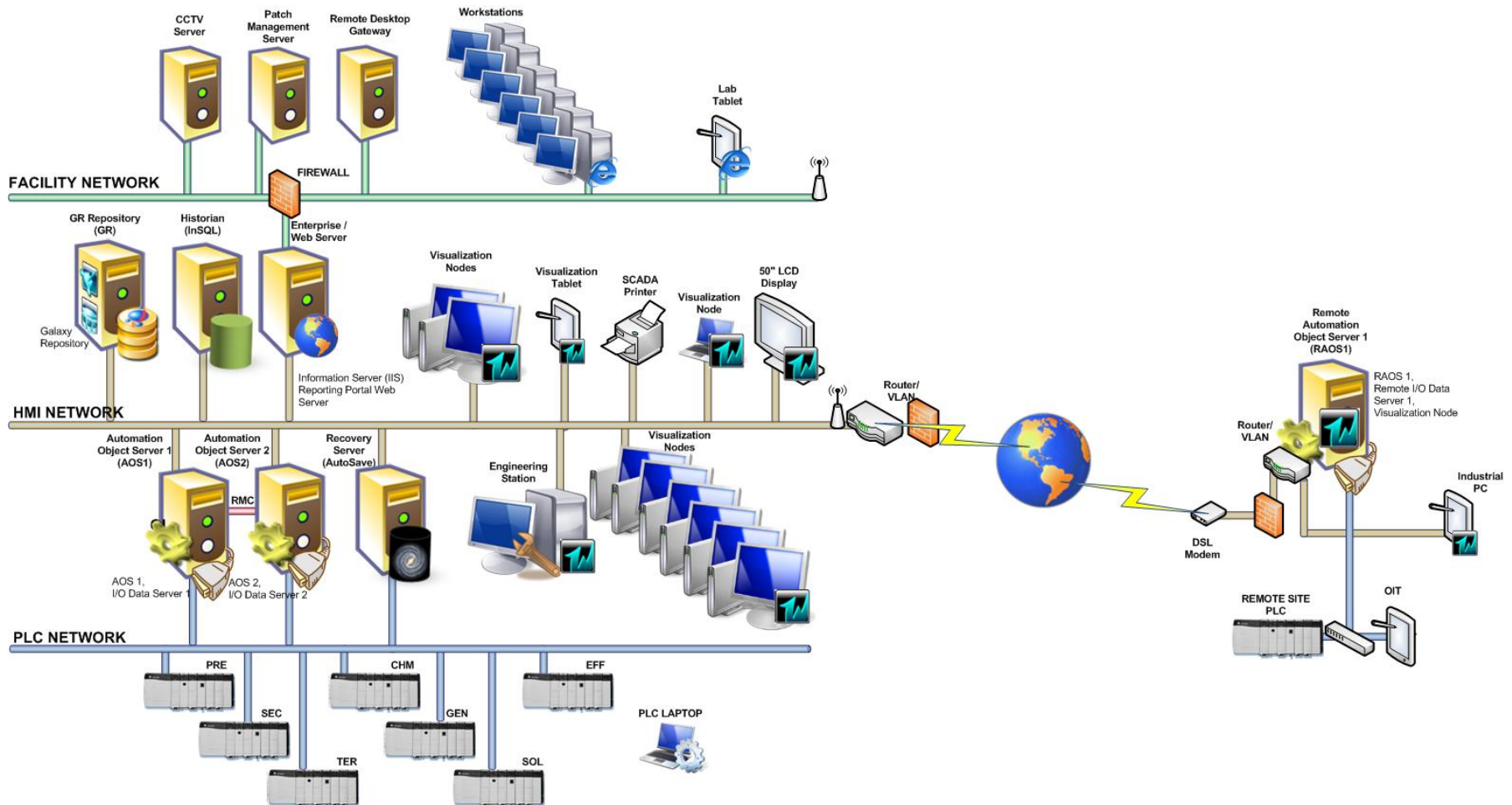
# Expanding the SCADA wirelessly



- Communications Options
  - Cellular (3G, 4G)
  - Local Wi-Fi



# Example of SCADA Architecture



# Mobility Options – Consider Your User



- Operator
- I&C Technician/Programmer
- Supervisor/Manager



Finished Water Flow		
Daily Finished Water Flow Report		
Date	Mitchell WTP	
April 1, 2009	9,270,000	i
April 2, 2009	9,792,000	i
April 3, 2009	10,781,000	i
April 4, 2009	9,227,000	i
April 5, 2009	9,602,000	i
April 6, 2009	9,759,000	i
April 7, 2009	9,069,000	i
April 8, 2009	9,492,000	i
April 9, 2009	9,733,000	i





# Live Demo and Questions



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