



Setting the Standard for Automation™

Industrial Wireless and Your Turnaround

Or

The 1% Solution

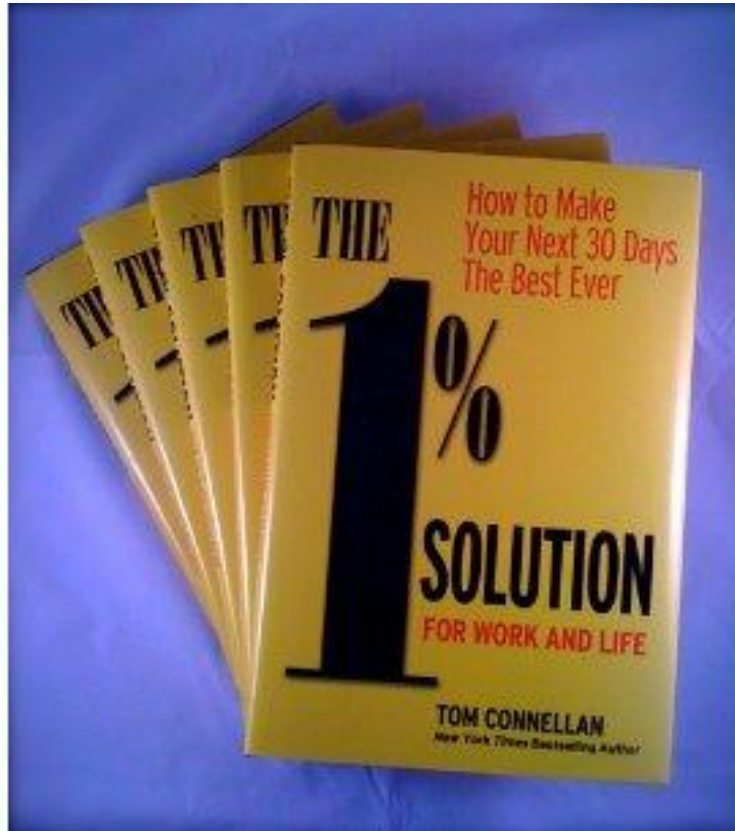
Standards
Certification
Education & Training
Publishing
Conferences & Exhibits

John Barth works with Apprion, Inc. in its Strategic Chemical and Energy Accounts. In his nearly 20 years in the technology industry, John has served in capacities from sales and account management to project management to executive leadership. His clients have included more than a dozen major chemical manufacturers and refiners as well as all of the so-called “majors” in the integrated energy area. Prior to joining Apprion, John was the vice president of professional services for Rapid Solutions, a Houston-based technology organization that pioneered realtime procedure-management and field-mobility software for industrial facilities.



Be Safe. Secure. Clean. Better.

Imagine



* Source *The 1% Solution* by Tom Connellan

Let's...



- Invest 1% of our turnaround budget in a fully functional wireless infrastructure.
- Use the technology to identify 1% savings opportunities in turnaround budget and completion time.
- Use the 1% saved to pay for the infrastructure.
- Find dozens of ways to use the infrastructure and applications post turnaround.

Be a Super Hero



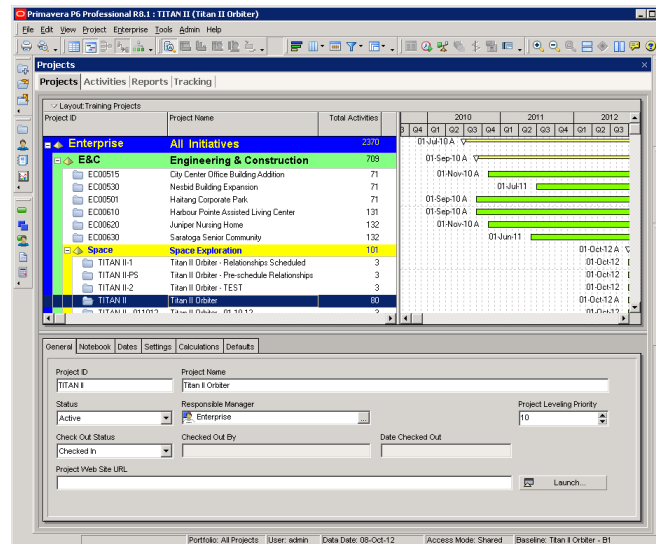
Today



From:



To:



Today's Turnarounds



- More effective than in the past
- 1-5 year planning cycles, based on size, scope and complexity.
- Driven by more regulatory compulsion than in decades past.
- Major focus of industry expertise, resources, papers, etc.
- Still tend to be over budget or missed deadlines.

But...



- 83% of turnarounds do not satisfy all performance expectations.
- 1 in 4 turnarounds significantly under-perform in more than one success criteria dimension; and are deemed a failure (or “train wreck”).

Source: Asset Performance Networks

New Best Practice to Deliver Predictably Competitive Turnaround Results

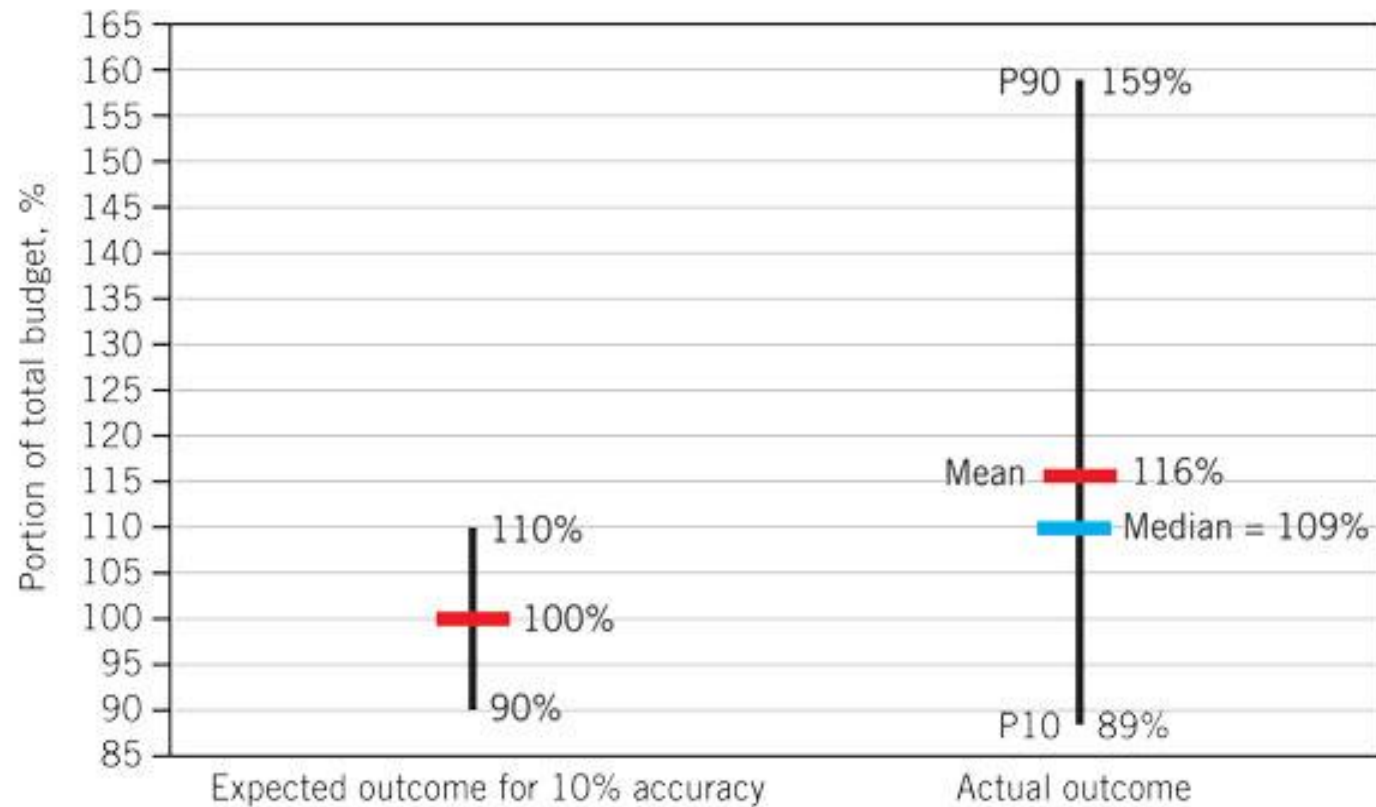
2008 Bobby Vivich

Reality....(Source: AP Networks)



ACTUAL TURNAROUND COST

FIG. 1



Five Stages of Turnaround Planning

- Strategic planning
- Detailed planning
- **Organizing**
- **Execution**
- **Closeout**

“The capture, analysis and availability of relevant information and metrics via management information systems will enable the appropriate managing of activities and identification of future improvements.....”

from ReliablePlant.com <http://www.reliableplant.com/Read/27760/strategies-to-optimize-shutdowns>

Current state of Industrial Wireless



- 64% of process manufacturing facilities reported having at least one wireless application installed at their facility
- A 23% increase in wireless adoption and an 85% increase in those considering wireless applications
- Compliance applications for security, safety and workforce productivity were the key drivers for adoption in 2010, with over 50% of respondents considering one of these applications
- Condition monitoring and asset management applications led wireless adoption with a year-over-year increase of 56%
- Video, communications and mobility are the applications driving the next wave of adoption.

Why Mobile Data for Your Turnaround?

- \$50 million turnaround-50 Day Schedule
- 1 Day saved = 2% of planned time and budget
- 1 Day = \$1 Million saved
- 1 Day of Additional Operating Revenue
- \$500,000 wireless investment equals 1% of total planned budget for turnaround.

How Do We Find the 1%?

- Contractor management – labor cost reduction.
- On-time delivery of equipment and services.
- Process incident reduction due to real-time access of latest, most up-to-date startup and shutdown procedures.
- Safety incident avoidance due to accurate data availability.
- Real-time Task management and reprioritization.

Where Do Cost and Time Variances Appear?

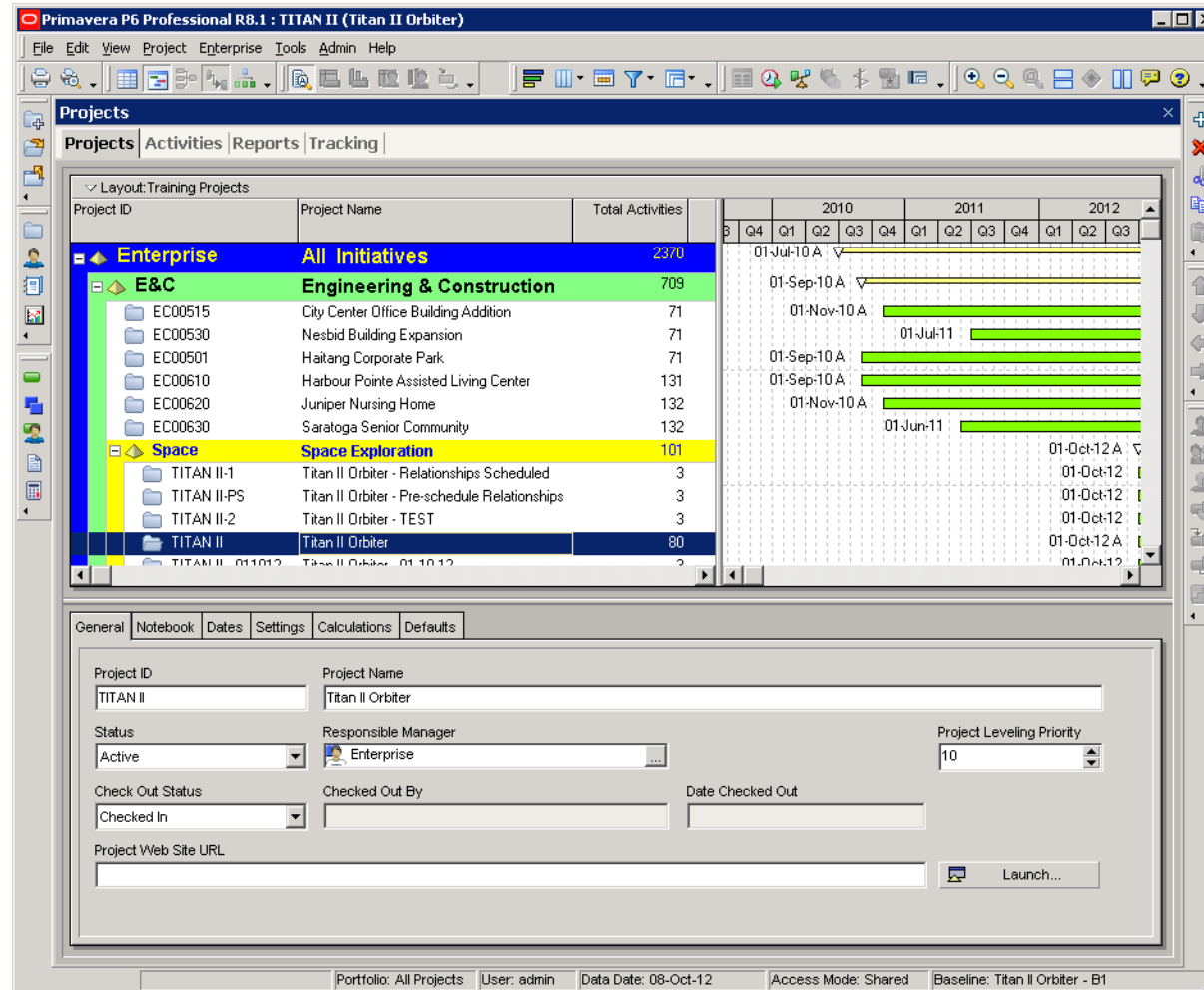
- Known scope (planned/estimated)
- Anticipated repairs (may or may not have been planned/estimated)
- Unanticipated repairs (not planned/estimated)
- Unauthorized work (not planned/estimated)
- Cancelled work (planned/estimated but culled during execution)
- Source: <http://www.maintenanceworld.com/Articles/plantmaintenance/shutdowns-turnarounds-outages-maintenance.htm>

Technology Solves Information Challenges



- Stakeholders in turnarounds are always pressed for time. It is recommended that all disseminated information conform to standard report formats. Familiarity with the **report format(s) will allow team members to read and digest the information quickly while minimizing the potential for misinterpretations.**
- Source: <http://www.maintenanceworld.com/Articles/plantmaintenance/shutdowns-turnarounds-outages-maintenance.htm>

Technology Solves **Formatting** Challenges



Real Time Data... Is There 1% Improvement Available?

- Since turnarounds are so dynamic, information needs to be updated **every shift** to maintain visibility and control. In order to help field supervision stay on top of changing schedule priorities, it is recommended that complete schedule updates be initiated just before the end of every shift so that updated schedules may be disseminated to the field at the start of the next shift. Without complete schedule updates every shift, the schedule will quickly become meaningless as a tool to manage and drive the project scope and execution.
- Source: <http://www.maintenanceworld.com/Articles/plantmaintenance/shutdowns-turnarounds-outages-maintenance.htm>

Real Time Data... Is There 1% Improvement Available?



Every Shift
Manual

Every Shift
Digital

Real Time

Contractor Management

- Direct vs. Indirect Labor Costs
- Permitting?
- Real-time Task assignment
- Crew scheduling
- Tradesman scheduling

Preventative Maintenance:

- Real-time access to equipment checklists and mechanical integrity procedures (MIP's)
- Allows for more efficient execution of planned maintenance.
- Access to data regarding unplanned equipment-maintenance requirements.
- Less time spent finding information in paper format equals more time spent executing in completing the turnaround.
- Completion equals cost savings.

Execution of Shutdown, Maintenance, and Start Up Procedures in Real Time

Procedures

Process Buddy   3:08p

Select a Procedure

5.3.7
Ammonia Tank Car Unloading

5.3.4
Anhydrous Ammonia Receiving and storage

Select  Menu



Tasks

Process Buddy   1:54p

Tank Wagon Pressure Unloading

31	Open the air valve and completely de-pressurize the T/W.	
32	Open the dome, and visually check the tank wagon to ensure it is	
33	Close and secure the dome of the tank wagon, and raise the "fall"	
34	Remove the wheel chocks and ground cable from the tank wagon.	
35	Complete the required unit paper work with the truck driver, and get	
36	Open the block valve on the suction line to the flush tank, T-E4-24.	
37	Close the inlet block valve to the receiving tank and get up-gauge	

Select  Menu



Results

Process Buddy   1:54p

Tank Wagon Pressure Unloading

31	Open the air valve and completely de-pressurize the T/W.	
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Select  Menu

[View Dashboard](#)

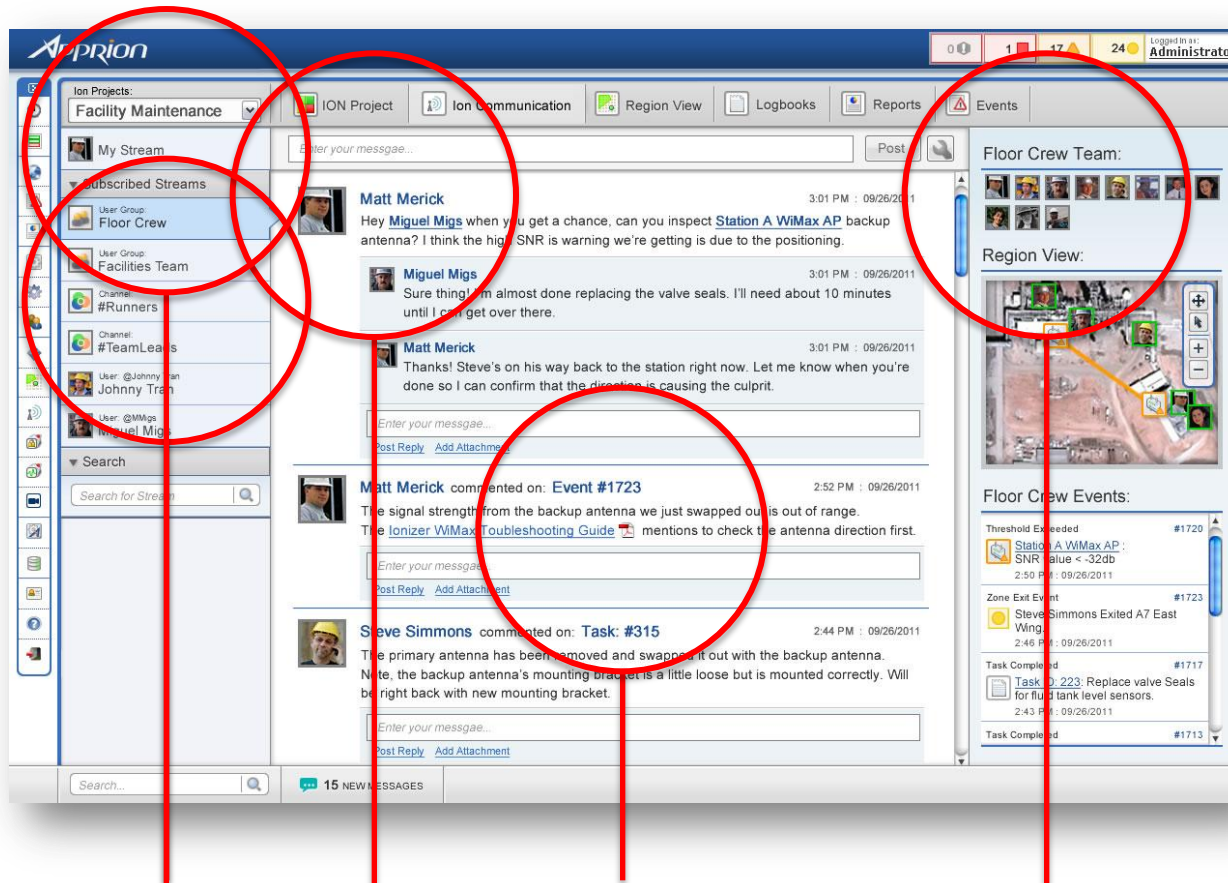
[View Sessions](#)

[View Document](#)

[Mark Complete](#)

[List SOC](#)

Performance Optimization



The screenshot displays the Aprion software interface, which is a communication and data management tool. The interface is divided into several sections:

- Left Panel:** Contains a sidebar with navigation options such as "My Stream", "Subscribed Streams", "User Group", "Facilities Team", "Channel", "#Runners", "#TeamLeads", and a "Search" bar.
- Top Panel:** Features a menu bar with options like "ION Project", "ION Communication", "Region View", "Logbooks", "Reports", and "Events".
- Central Panel:** Displays a communication stream with messages from users like Matt Merick and Miguel Migs. It includes a "Post Reply" button and a "Post" button.
- Right Panel:** Contains a "Floor Crew Team" section with a list of team members, a "Region View" map showing a facility layout, and a "Floor Crew Events" section listing various events and tasks.

Red circles and lines highlight specific features: a circle around the "Subscribed Streams" section, a circle around the "Floor Crew Team" section, a circle around the "Region View" map, and a circle around the "Floor Crew Events" section. Red lines connect these circles to the descriptive text at the bottom of the slide.



My stream is customizable for user to show relevant data such as crew teams

Customizable by user to show relevant data such as PIDs and videos

Other Unexpected Benefits

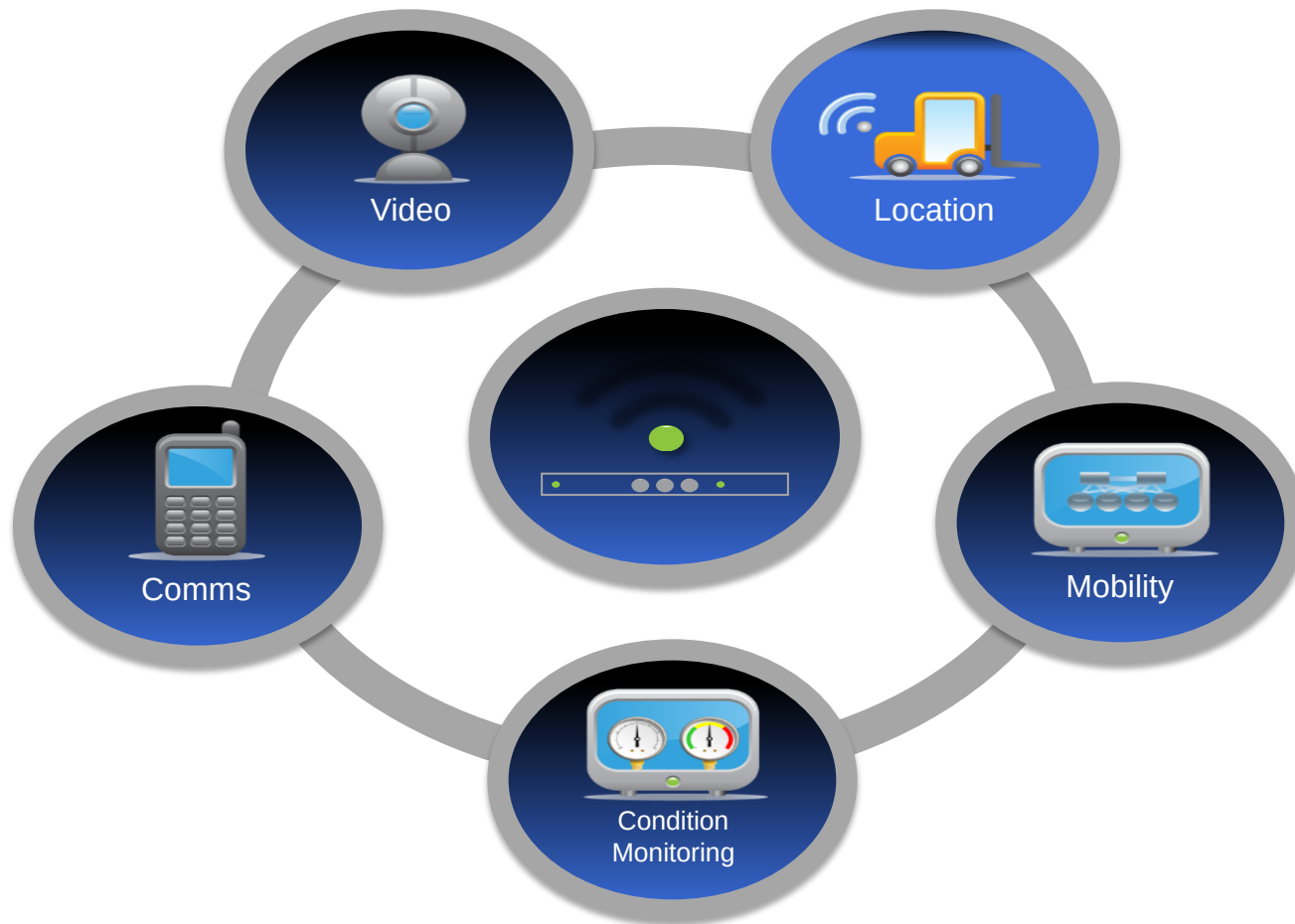
- Post mortem project data available in real time for maintenance, operations AND for project team planning next turnaround.
- Actual Turnaround data archived for measurement against pre Turnaround KPI's and goals.

Lessons Learned

1. Set clear, measurable KPI's and have access to historical data for each.
 - i.e Contractor management – labor cost reduction. Do you know what your costs were during the last shutdown? Do you have accurate, real time data for this turnaround?
2. Train personnel on effective use of wireless technology.
3. Articulate the value of new technology long before start of Turnaround.

Why Wireless for Your Turnaround?

- Because it's not just for your turnaround:



Other Benefits

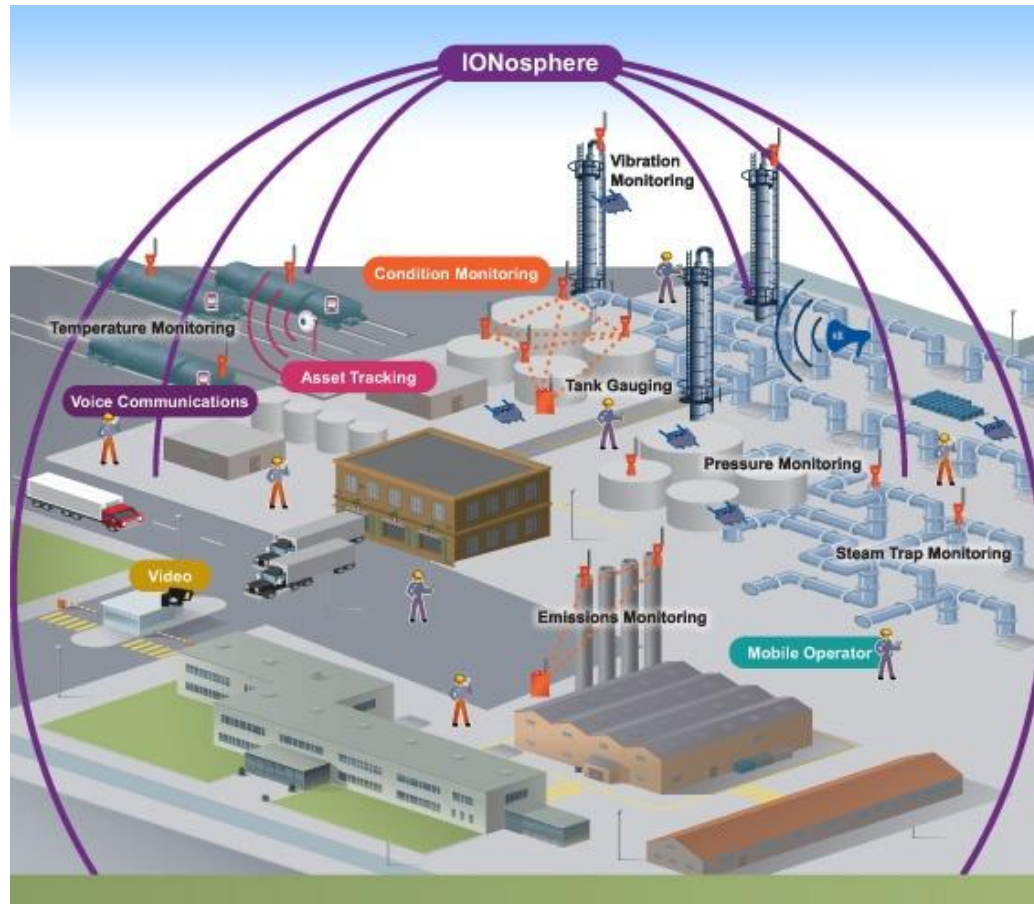


- Wireless infrastructure becomes a cross functional tool/conversation by default because of nature of turnarounds. (Maintenance, operations, safety, security, etc.)
- Each team member will be able to give input on how to further utilize the wireless infrastructure for efficiencies after the turnaround has been completed.

If You Build It...



Is This Heaven?



Other Benefits

- By tying the cost of the initial wireless infrastructure into the turnaround planning and budgeting, the challenge of finding executive sponsorship is overcome.



Increased Equipment Uptime (post turnaround):



- Any equipment identified as a potential challenge (so-called bad actors) can be monitored post turnaround utilizing the wireless infrastructure paid for by the turnaround.
- Increases in equipment uptime have proven to be both more cost-effective and safer for the workplace. Reduces unplanned outages.

Management of Change (MOC):

- During the turnaround, plant personnel always identify procedures or P&IDs that are either outdated or require some change.
- Real-time access to procedural data and management of change software allows the MOC process to be streamlined.
- MOC-Updating of plant data. “As is” tracking of P & IDs, MIP’s, Procedures, etc.

And...You're a Super Hero



Thank You!



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