



Setting the Standard for Automation™

Improved Safety through the Use of Wireless Technology Results in a 25% Increase in Production

Standards
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i n v e n s y sTM
Operations Management

Avantis Eurotherm Foxboro IMServ InFusion SimSci-Esscor Skelta Triconex Wonderware

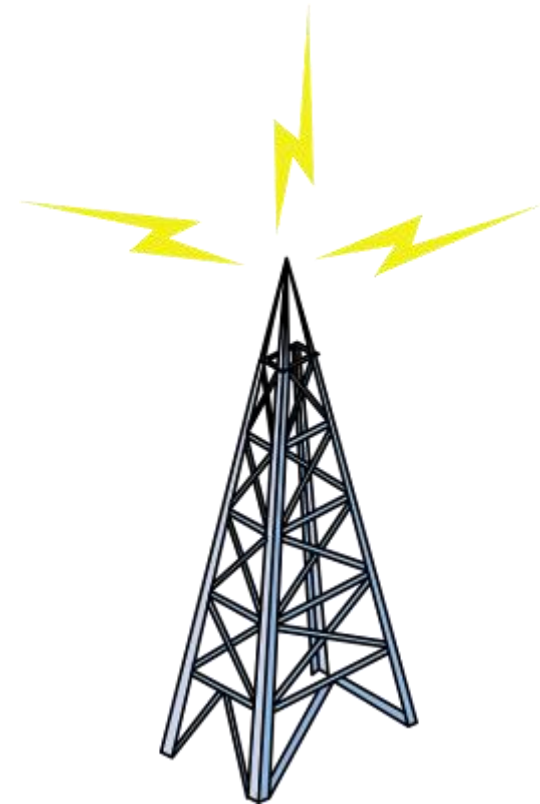
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- Customer Concerns
- The Perceived Threat
- Potential Wireless Applications
- Industrial Application of Wireless
- Collaboration Workflow
- Possibilities

Customer concerns are being addressed



- Lack of security
- Incomplete & conflicting standards, frequencies, & protocols
- Haphazard growth / no clear roadmap
- Weak industrial quality
- Poor migration path for investment preservation
- Inconsistent support within IT organizations
- Cost of operation uncertainties
- Network management challenges
- Lack of proven applications



- Jamming** – *is usually (deliberate) the transmission of a signal to disrupt communications by decreasing the signal to noise ratio.*
- Hacking** - *intentionally accesses a computer without authorisation or exceeds authorised access.*
- Man In The Middle Attack** - *is a form of active eavesdropping in which the attacker makes independent connections with the victims and relays messages between them, making them believe that they are talking directly to each other over a private connect. But the entire conversation is controlled by the attacker.*
- Malware** - *software that is intended to damage or disable computers and computer systems.*
- Virus** - *is a program or programming code that replicates by being copied or initiating its copying to another program, computer boot sector or document.*

Potential Wireless Applications



- **Personnel Tracking/Locating**
- **Human Safety Management**
- Product/Material Tracking
- **Field Operator Efficiency**
- **Field Maintenance Efficiency**
- Plant Security
- Business Performance Measures
- **Incremental Process Measures**
- Incremental Equipment Measures
- Extended Plant Visibility (Video)
- **Process Management**
- Push to Talk
- **Access Control**
- Intrusion Detection
- **Safety Event Monitoring**
- Leak Detection
- **Equipment Measurements**
- Product Measurements
- **Mobile Worker**
- Key Performance Measurement
- Rolling Stock Tracking
- Mobile Asset Management
- **Evacuation Management**
- Business Continuity
- Disaster Recovery
- **Collaboration Work Flow**

Mobile Operations – Control in the Field



Arkema – Rotterdam

Customer Challenge

- Need to maintain normal operations during night shift.
- Operational Integrity requires 3 panel operators on shift, yet statistical average is <3 during night shift.
- Operational effectiveness reduced due to disruption to manufacturing procedures.

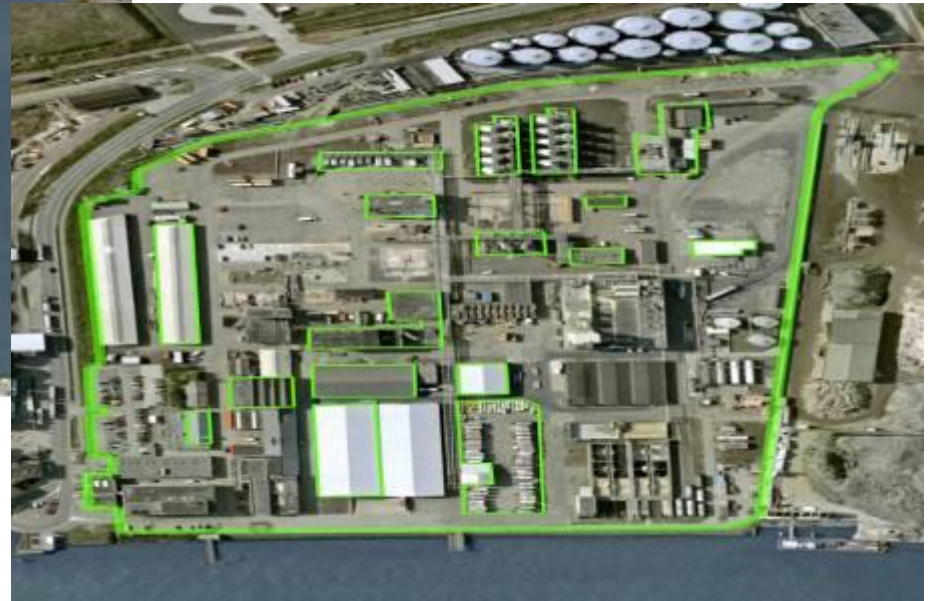
Solution

- Install WiFi backbone utilizing true Ethernet over wireless
- Install WiFi hotspots for operational coverage,
- Managed wireless infrastructure to guarantee response latency
- Extend HMI to the field for critical alarm management
- Enable “safe state” procedure from wireless handheld.

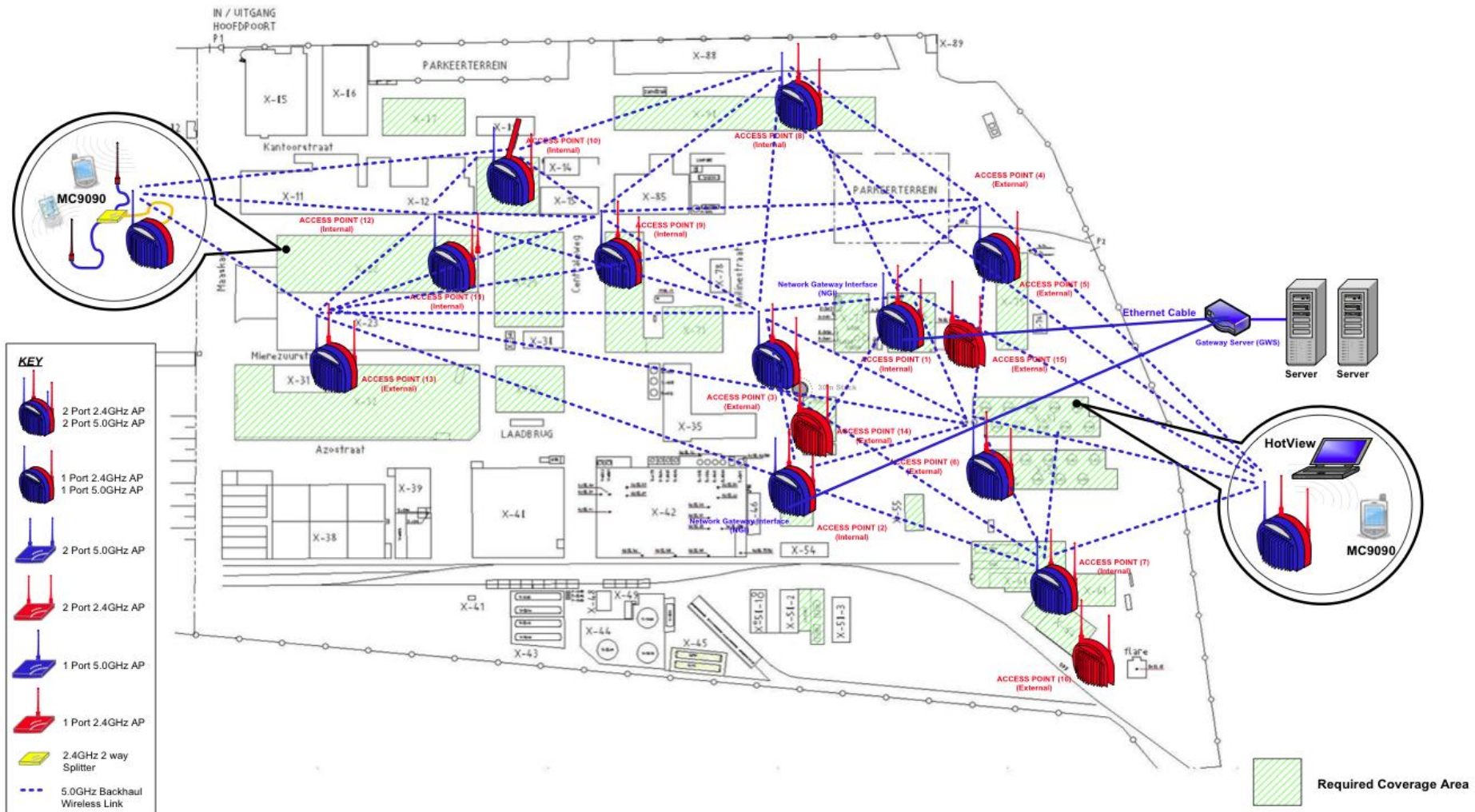
Results /Benefits

- Operational Integrity maintained with 2 panel operators in the field.
- Alarm rationalisation reduced overall alarm load/distribution to EEMUA-191 guidelines
- Wireless infrastructure bandwidth allows other solutions – such as security video to be installed at no additional cost to the infrastructure

Very dense RF environments

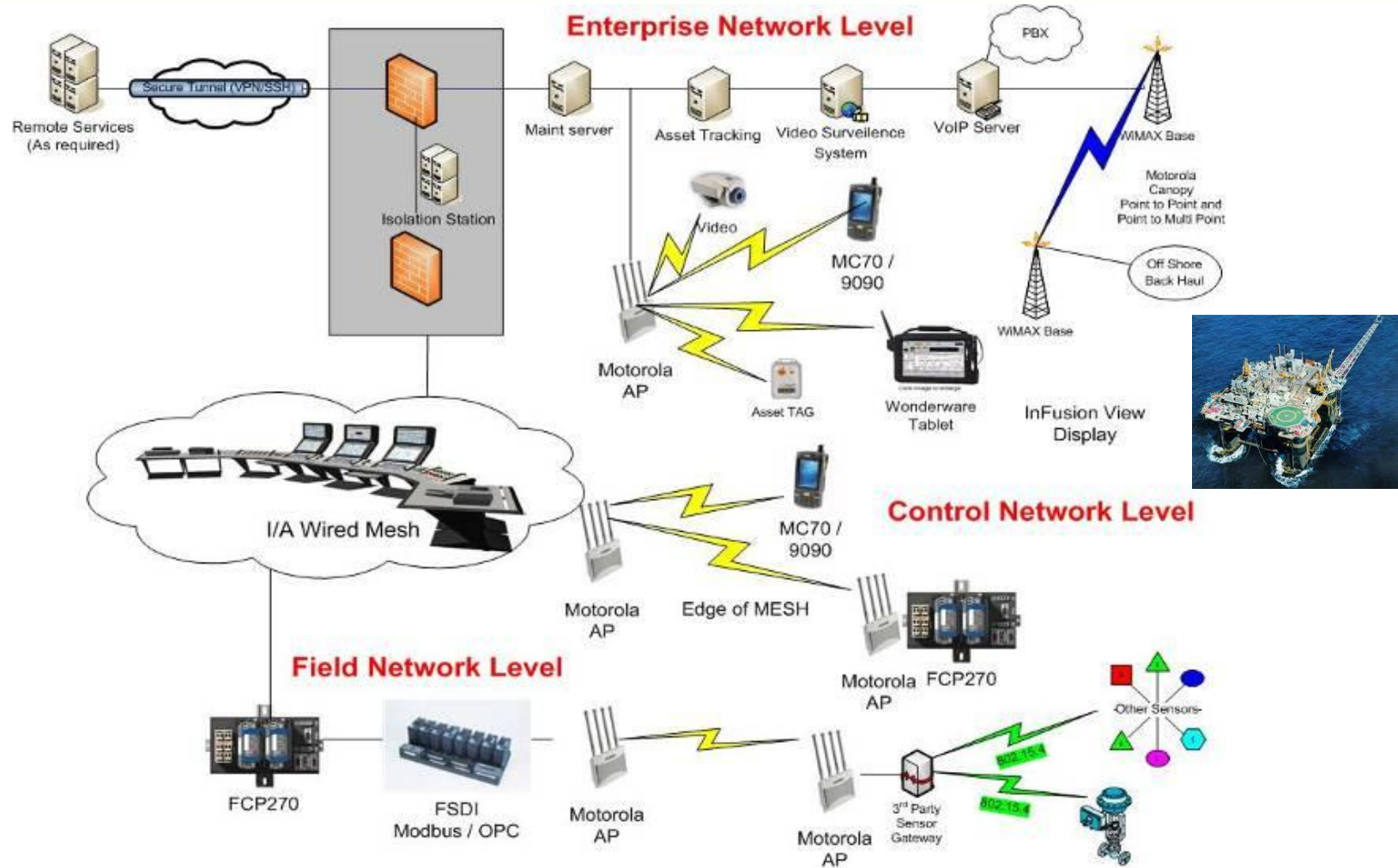


A Wireless Mesh Infrastructure that offers true Ethernet over Wireless



Industrial Application of Wireless

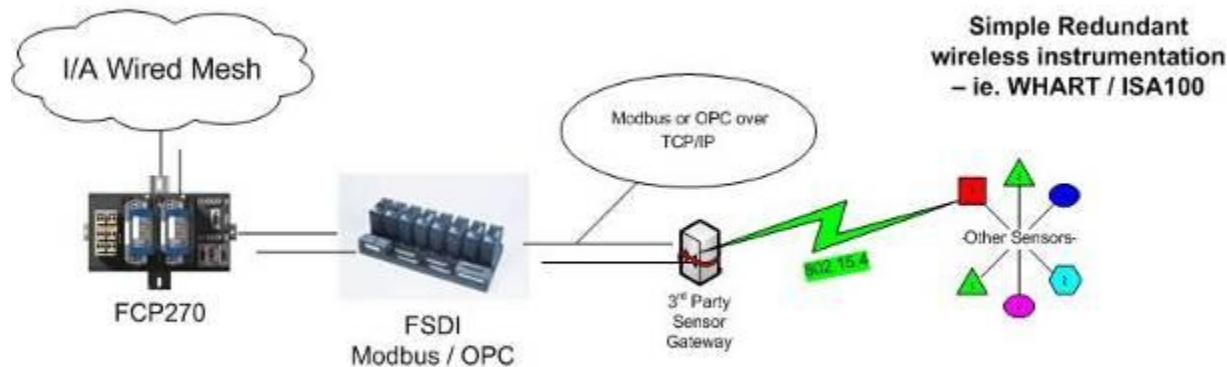
Top Level Reference Architecture



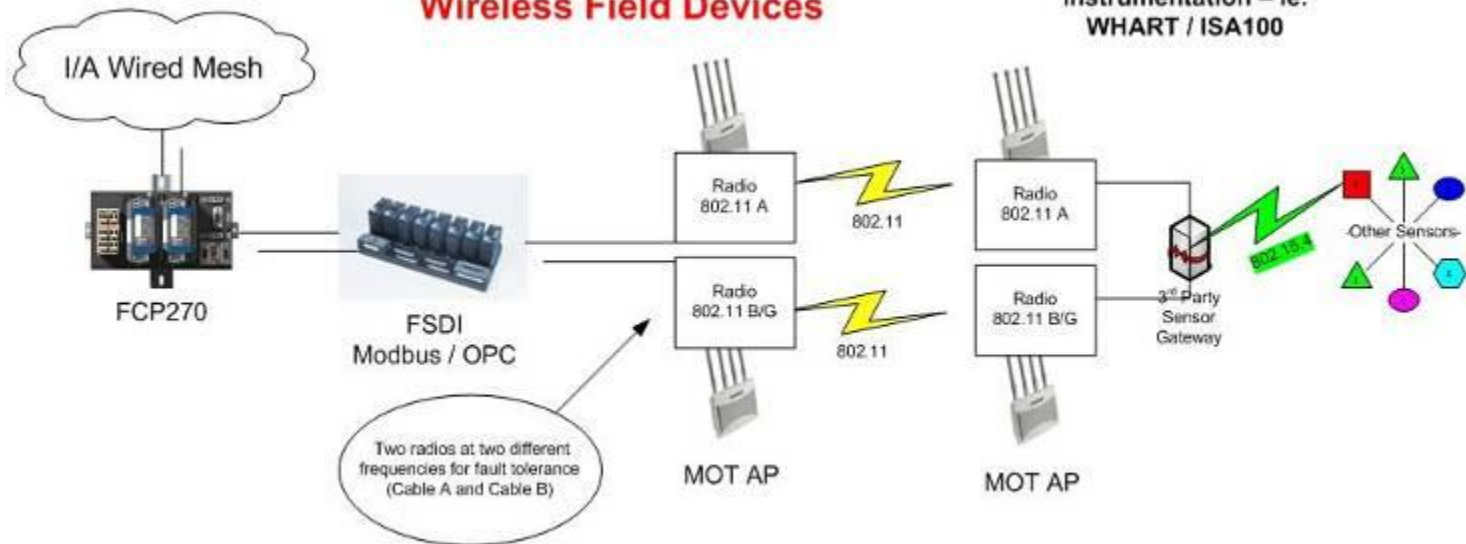
Supported interface to wireless field devices WHART, ISA100



Wireless Field Devices



Wireless Field Devices



Wm Grant and Sons – Girvan

Customer Challenge

- ▶ Need to measure water extraction following new UK mandatory guidelines
- ▶ Need to control water extraction following new UK mandatory guidelines
- ▶ No way to plant cable due to 3rd party ownership.

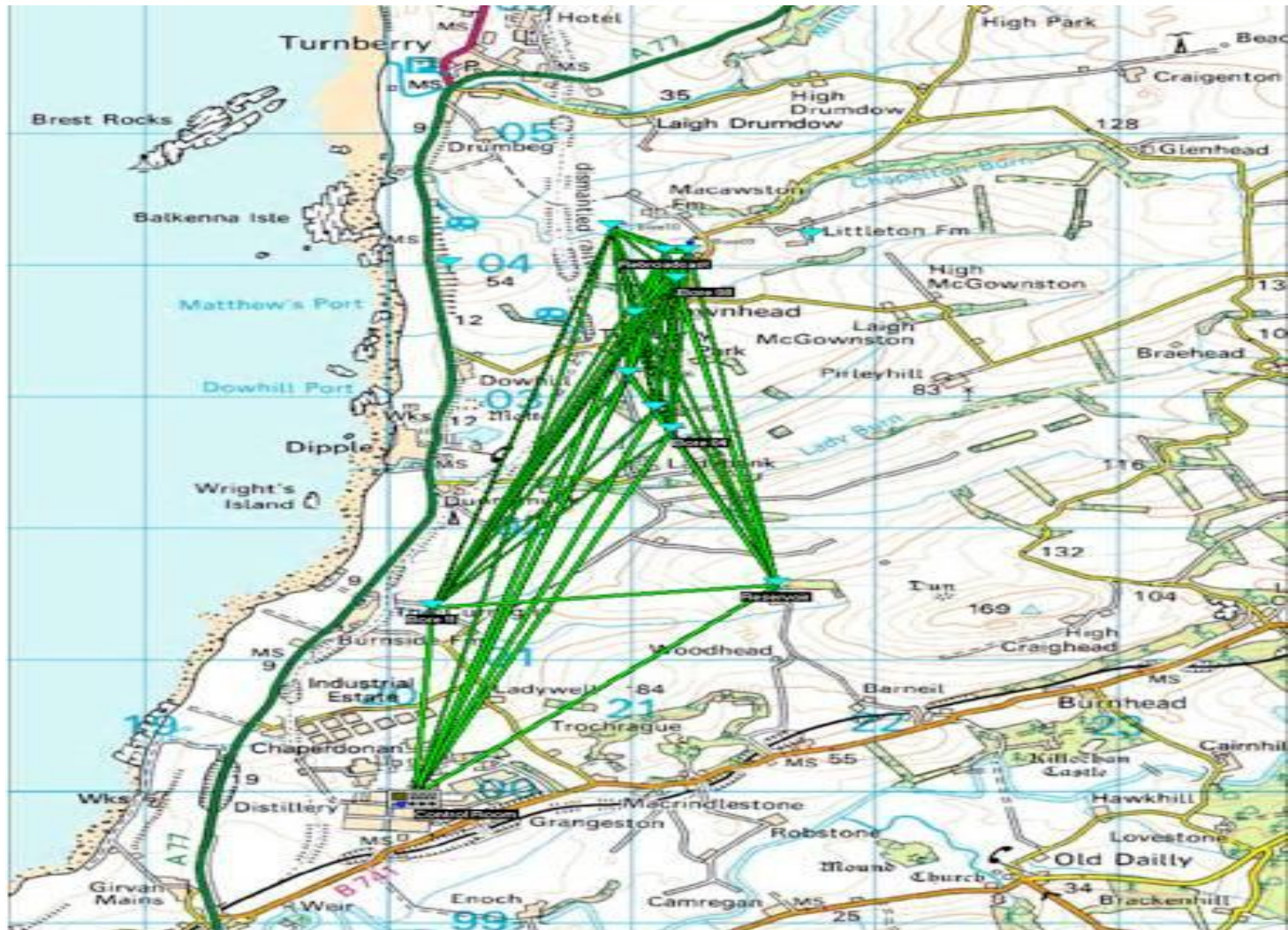
Solution

- ▶ Install WiFi Mesh Backhaul
- ▶ Integrate local PLC I/O into wireless architecture for link to I/A control some 4.5Km maximum point to point.
- ▶ Managed wireless network for guaranteed latency
- ▶ Mesh network optimized to 3-alternate data routes to DCS to ensure redundancy & system resilience.

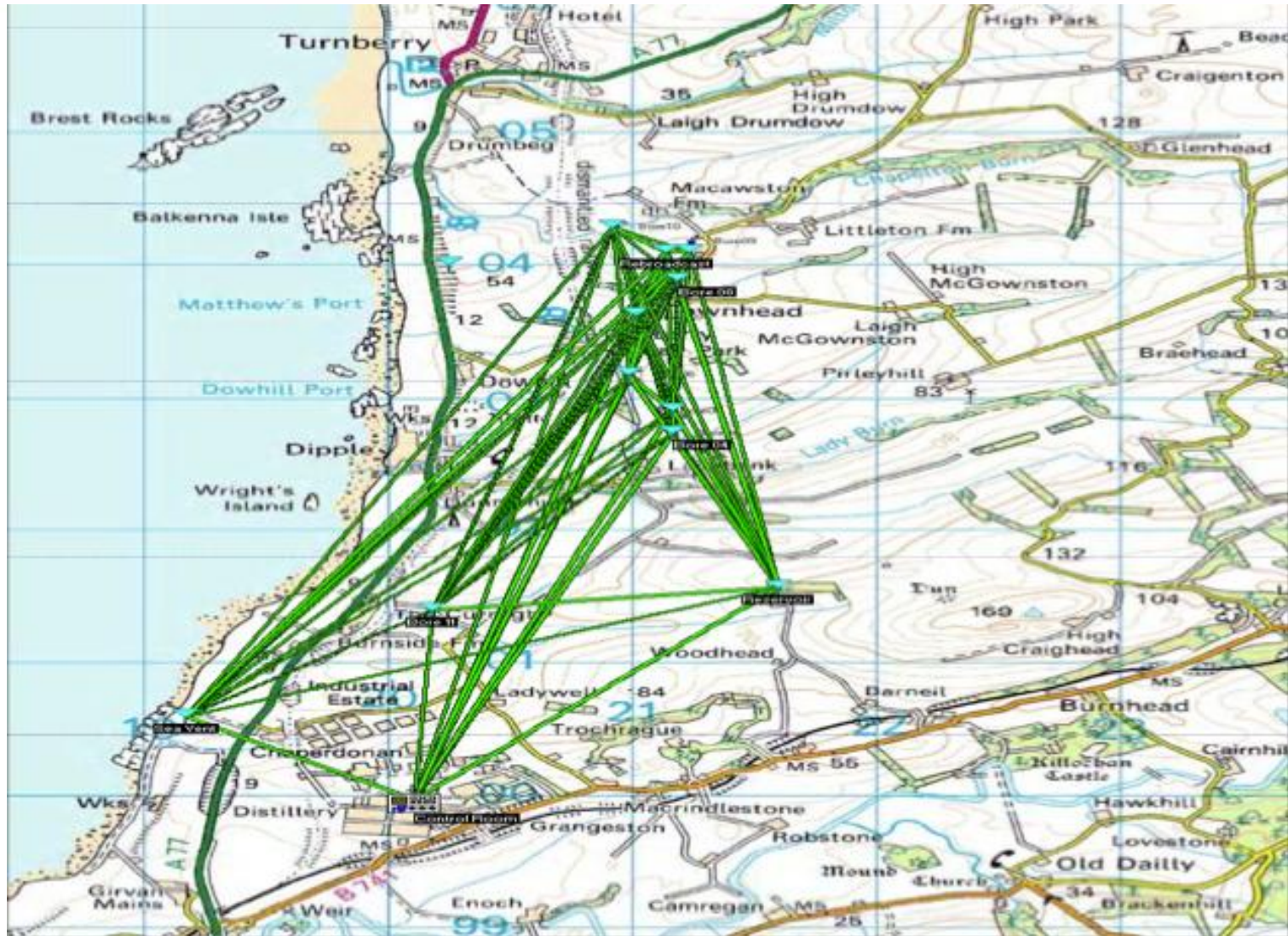
Results /Benefits

- ▶ System functional for over 36-months with no reported loss of data-packets, monitoring or control.
- ▶ Wireless infrastructure allowed easy extension – including water monitoring outfall measurement to be easily installed & integrated.

Mesh Solution over 5.5km



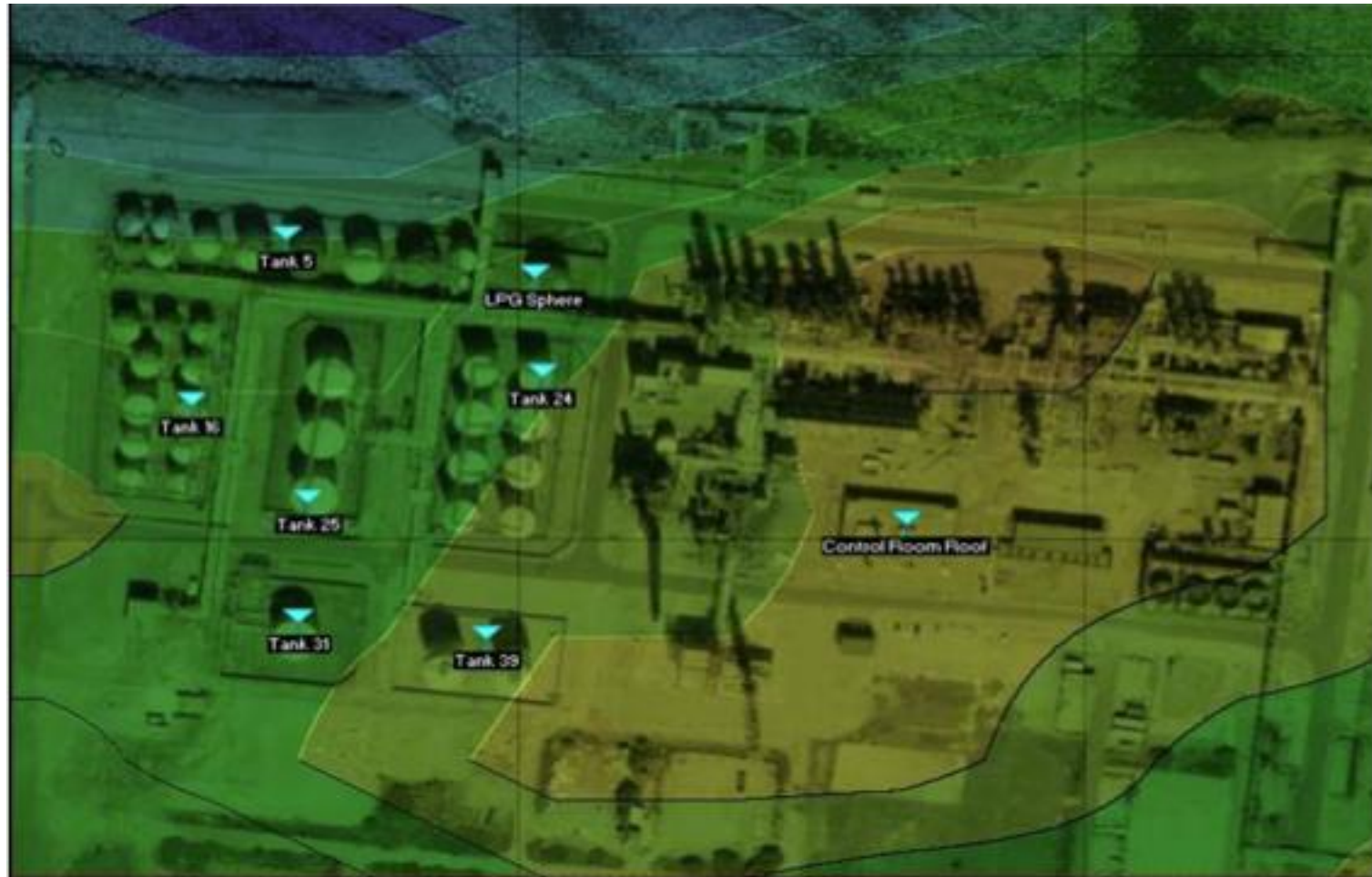
Expanding a Mesh Network is Easy and at little cost



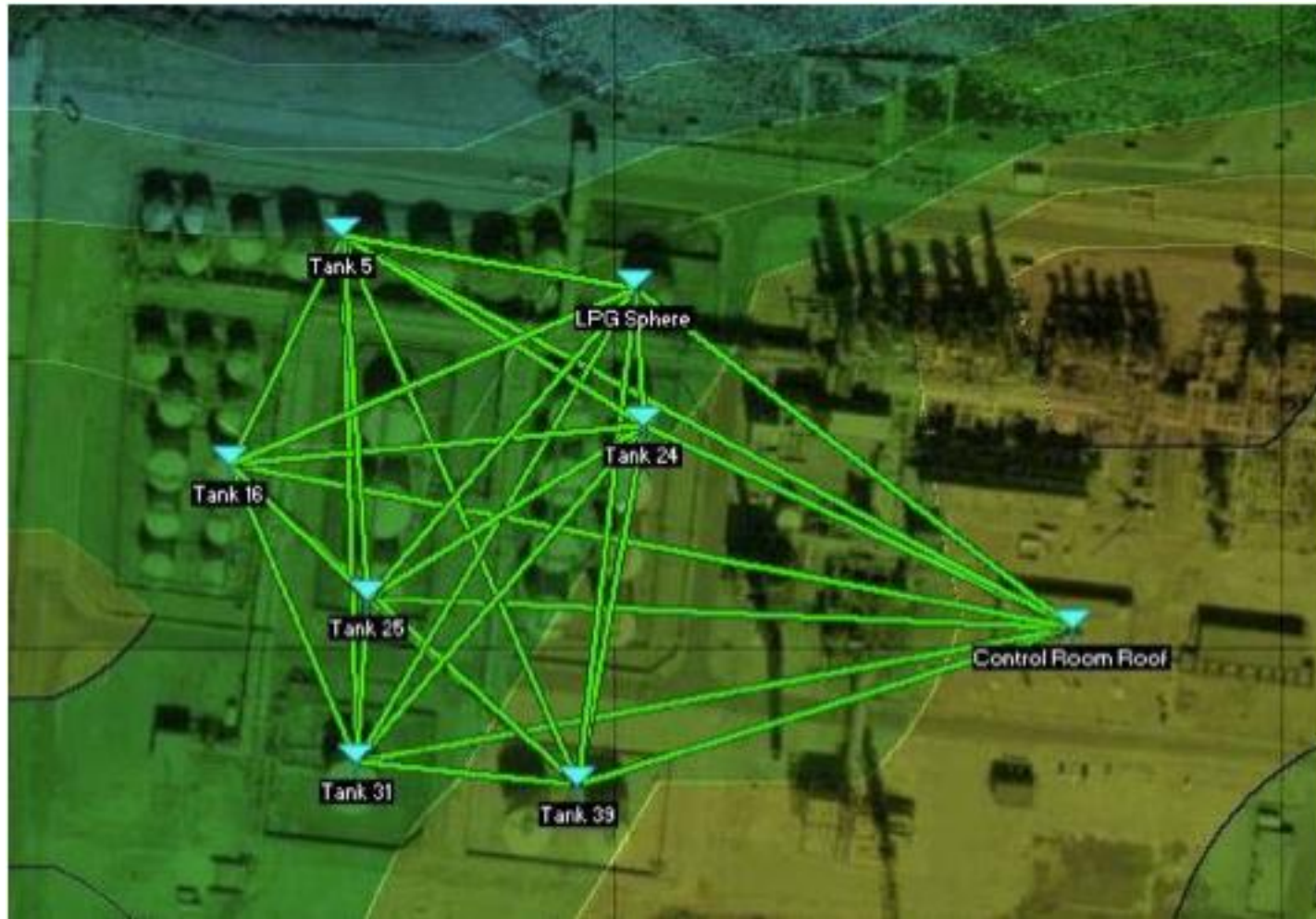
Asset Optimisation

Installation of Smart Devices at Tank Farm

Estimated price for trenching and cable = £4-5M

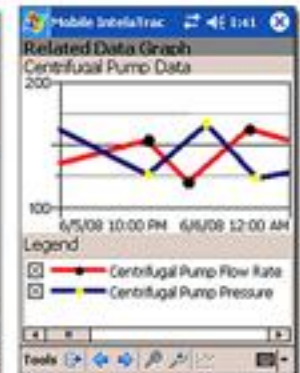
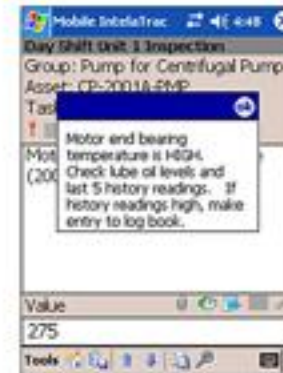
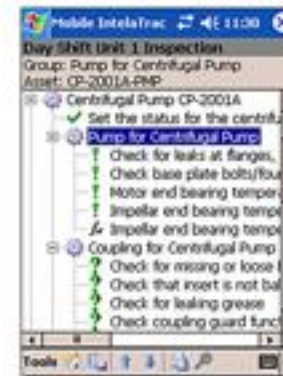
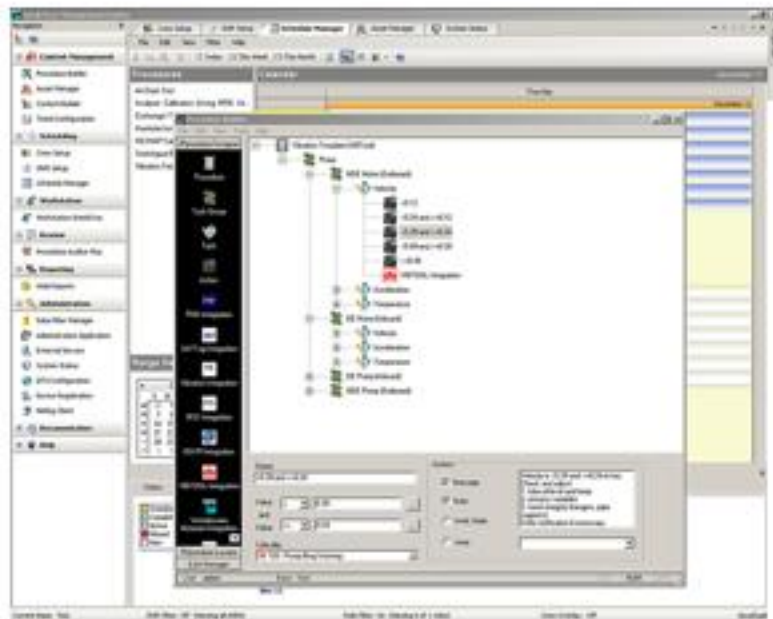


The Wireless Solution would have cost less than £200k



Collaboration Work Flow

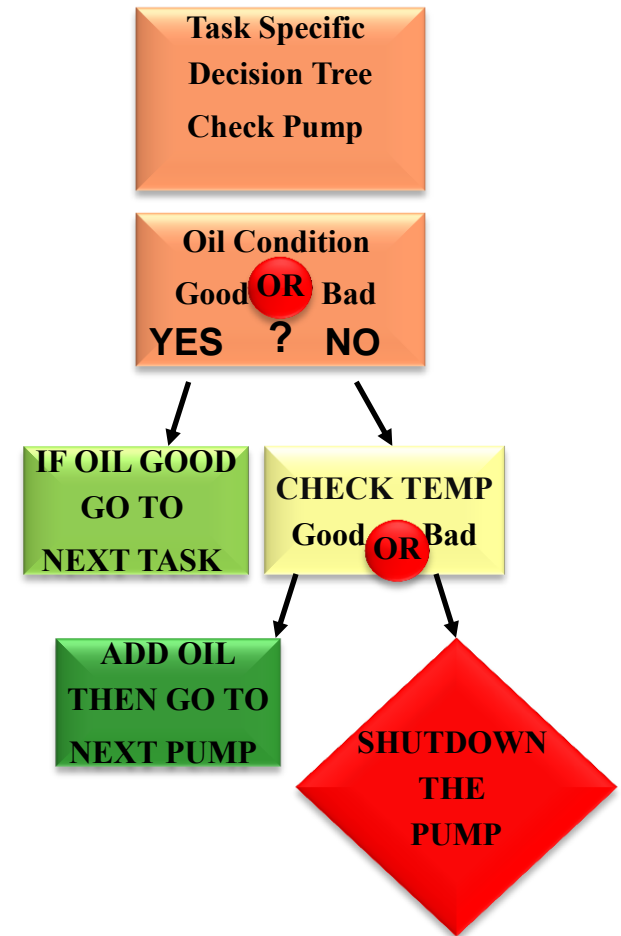
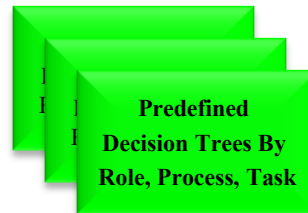
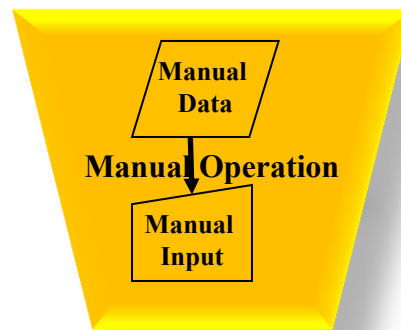
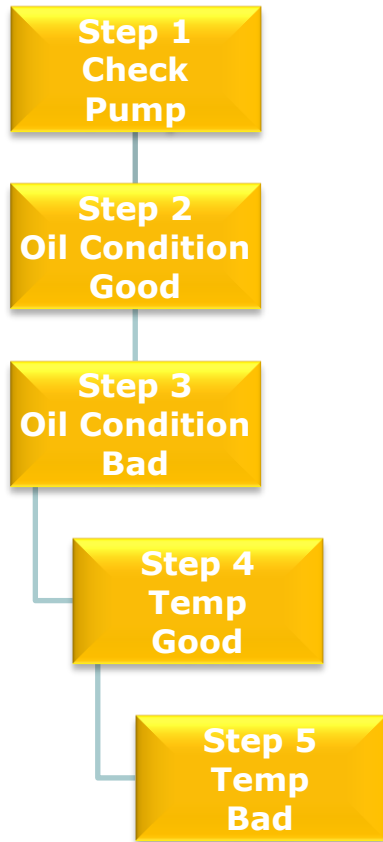
First Wireless enabled Intelatrac shown at Neuss Dec 2010



Enabling Intelligent Workflow



Linear Procedures VS IntelaTrac Mobile Workflow Approach

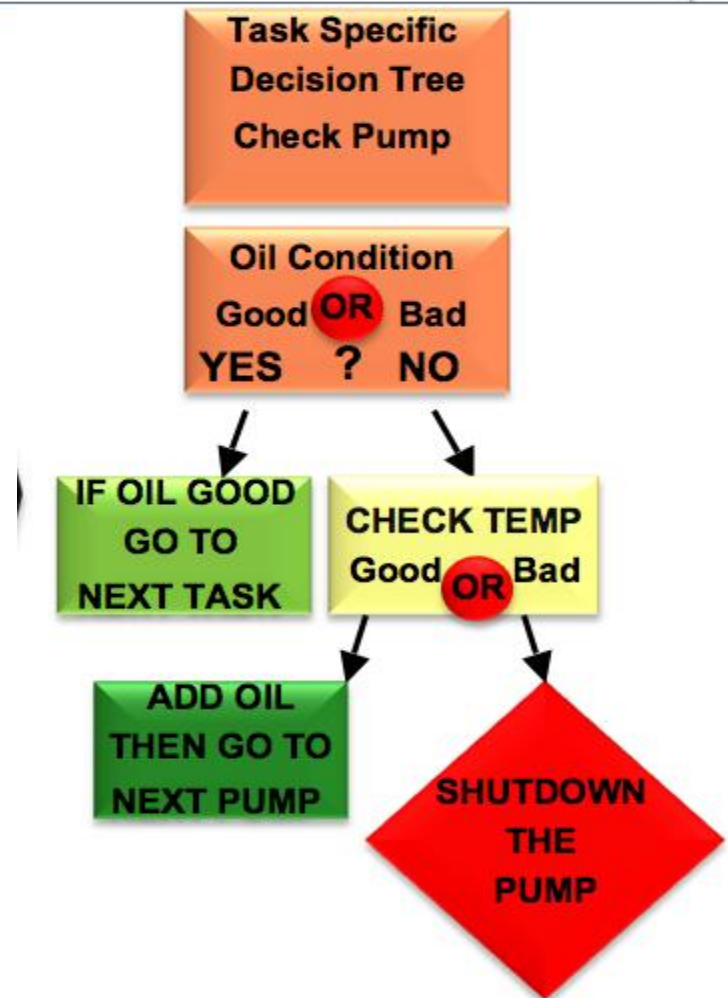


The Combination of the two:

As shown on a previous slide, when an operator is on his rounds and records his findings and actions, it is possible to have these fed directly to the Control Room in real time.

So after replenishing oil in a piece of turning machinery and the Control Room notice this has been done twice in the last 24hours, they can raise another ticket to check for leaks....immediately.

This is sent directly back to the operator in the field as opposed to making another trip.



Questions?



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