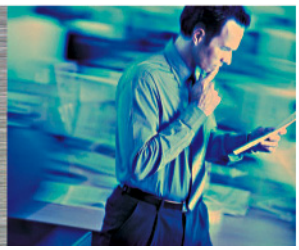
White Paper

Honeywell

Honeywell Process Solutions



Preparing for Industrial Wireless

The decision to implement wireless technology in your industrial facility is probably one of the most strategic decisions you will make in the next few years. The right decision will enable an infrastructure that will provide significant benefits for your company from wire savings to improved operations. Wireless is a complex enabling technology that requires many considerations before broad deployment in an industrial facility. This document outlines questions to consider as you make this decision.

Imagine the Possibilities

Wireless technology provides a low-cost solution for remote sensing and for enabling a mobile workforce. The possibilities are endless. Imagine sensors gathering data where traditional devices can not reach, providing more real-time data to make knowledgeable decisions. Imagine a wireless network delivering on the promise of lower installed costs. Industrial users expect a secure and reliable network that supports multiple types of wireless-enabled applications that will:

- Keep their plant, people, and the environment safe
- Improve plant and asset reliability
- Optimize a plant through efficient employees and processes
- Comply to industrial and environmental standards

These wireless-enabled solutions will reap operational and safety benefits through the following applications:

Keep their plant, people, and the environment safe
• A location system throughout the facility to monitor employee locations and ensure safe procedural operations • Safety shower monitoring • An infrastructure that supports emergency responders • Wireless leak detection and repair capabilities
Improve plant and asset reliability
• Continuous wireless monitoring of equipment and field devices for diagnostic equipment health assessments • Wireless workers device commissioning and configuring with automated field operator rounds and access to on-line data, reports, and manuals. • Equipment health management visualization, such as computerized maintenance management system, inventory management and document management
Optimize a plant through efficient employees and processes
• Mobile operators operating their desktop applications and their control room displays on handheld computers • Input/output modules and sensors to monitor real measurements in plant versus inferred values or for control • Sensors for upgrading tank instrumentation • Voice over IP for communicating among all field workers equipped with WIFI devices. • Continuous wireless corrosion detection to ensure integrity of piping systems
Comply to industrial and environmental standards
• Emissions monitoring • Leak detection and repair

Current and Future Landscape

As with most emerging technologies, today's market offers proprietary wireless-enabled solutions that tactically solve industrial business needs, but may not meet requirements for the future. Key implementation issues that must be addressed include handling multiple types of devices from just a few to thousands, operating in noisy RF environments, sending data reliably, good device power management, and solid, simple security. To help keep up with the development activity and help users find the best solution for their unique application, several organizations are drafting recommendations or standards as well as offering open solutions.

For example, the Instrumentation, Systems and Automation Society's (ISA) SP100 initiative, chartered early in 2005, represents an opportunity to create a roadmap for implementing wireless systems in the automation and control environment through defining and publishing a set of standards, recommended practices and technical papers. The SP100 group brings together representatives from supplier, end user and R&D communities to create a balanced set of guidelines.

The adoption of wireless technology standards is a crucial component that will have wide-ranging impact on global manufacturing. The SP100 committee has an opportunity to identify the optimal set of current technologies and protocols to meet end user needs with a strategic eye to wireless evolution.

Getting Ready for Wireless

Many industrial facilities are already deploying wireless networks for targeted requirements. To help plants get ready for this future, the list below presents considerations and questions to ask in preparing for how this emerging technology can enable robust business results.

Functionality – Consider how many different functions can be made more efficient with wireless technology.

- ☑ Will you do low-speed monitoring as well as high speed monitoring for certain process measurements?
- ☑ Will you consider some simple control applications?
- ☑ Do you want to enable your field workers with wireless handheld devices to access data and interact with various servers in the facility?
- ☑ Will you want first responders to utilize your wireless network in case of an emergency?
- ☑ Are you willing to deploy multiple wireless networks to manage and maintain or do you just want one strategic network? (Many users have multiple uses but want just one wireless network to deploy and manage.)

It's important to first scope out your wireless needs now and the future, and make a strategic decision on the selection of your wireless network based on these needs.

Reliability – Can your operations survive without the information brought wirelessly? Most can today, but as you look forward and really embrace wireless, your future applications will require a more reliable network. Also, most wireless solutions are using the unlicensed Instrument, Scientific and Medical (ISM) frequency bands which provide limited bandwidth for your plant.

- ☑ Have you developed a plan for how you are going to use the ISM bands in your industrial facility? This consideration will help a plant ensure solid wireless operations. Sub-optimized ISM bands will lead to reduced scalability and reliability, limiting your wireless usage, much like a wiring conduit that's already full.

Security – It's understood that security is essential to protect against malicious intent and to protect your intellectual property, your bottom line and your people.

- ☑ So what security do you need? How much is enough?
- ☑ Do you need just one security system or many?

This is another major consideration as you strategically deploy an industrial wireless network. You most likely will want to have just one wireless security approach. This limits your management of the system and provides you the opportunity to pick the best available solution to match your wireless uses today and into the future.

Are you prepared to go wireless? Some questions to consider.

- Do you want to enable your field workers with wireless handheld devices to access data and interact with various servers in the facility?
- Can your operations survive without the information brought wirelessly?
- Do you want to manage just one wireless security system or many?
- How long to you want your wireless devices to be self-powered?
- How many devices do you want your network to handle now and in the future?
- How many application interfaces will need the wireless data?

Power Management - When most users consider wireless deployments, they understand the upside of no wiring and the cost advantage, but they also envision the downside of having to change many batteries in industrial devices throughout the facility. Device power management is a very important consideration when selecting a wireless network.

- ☑ How long to you want your wireless devices to be self-powered?

This is a complex question because it the answer must consider the power source, the devices needs and how often the device communicates. Most users will require a device that is self-powered for at least three years and at best, for the lifetime of the device. This is a reasonable demand when selecting a wireless network.

Scalability – Planning for future growth and considering what happens when your wireless demands are for several thousand devices must be a consideration in selecting your network.

- ☑ How many devices can your network handle?
- ☑ Will that be enough for the lifetime of your wireless network?
- ☑ What happens when you go beyond the limit of your network capacity? Can your network expand?

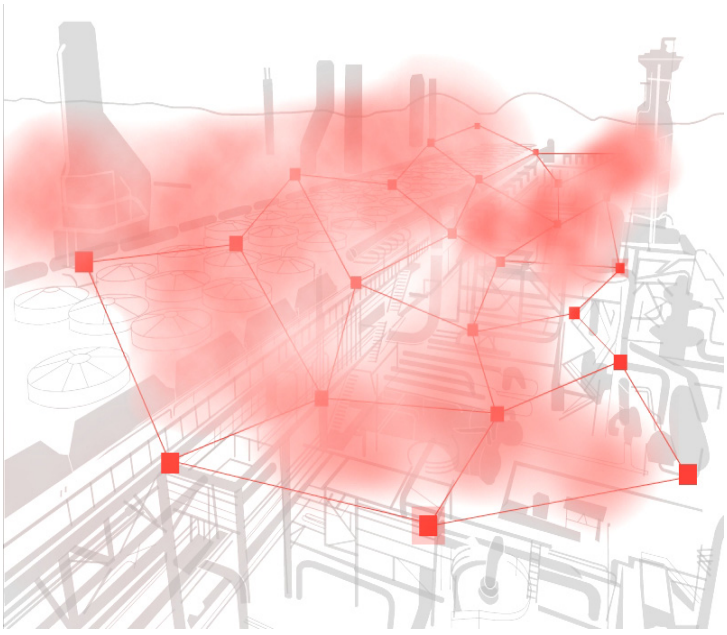
Many users begin with very limited wireless needs but as they begin to see the benefits of wireless technology, their needs grow exponentially.

Legacy Application Interfaces – Many plants reap benefits from having previously deployed multiple application interfaces throughout the facility. These include Modbus, OPC, HART, FOUNDATION Fieldbus, Profibus, Ethernet and many others. How many of these have you deployed in your facility? Usually, plants contain multiple application interfaces driven by different departments. Many users also want information coming from their wireless devices to utilize these existing legacy applications and protocols. When selecting a strategic wireless network you must have the ability to easily interface with all your legacy applications that will require wireless data. This is very important because this network will service your whole operation, not just one department.

- ☑ Can your wireless network serve many application interfaces?

Choices – As you select your strategic wireless network, you will need product choices. This opportunity for choice provides ideal pricing alternatives and best-in-class products. When a standard is developed or open solutions are offered, many suppliers adhere to those technology specifications and offer choices for customers in the devices they deploy in the network, as well as the applications that can run in the network.

Next Steps: A Strategic Initiative Based on Cooperative Effort



A strategic wireless infrastructure creates a multi-functional 'cloud' over an entire facility.

There are many aspects to consider as you deploy wireless in your industrial facility. Deploying this enabling technology is a strategic decision.

First, consider all the areas discussed above in a comprehensive wireless solution for your facility. Industrial wireless networks that do not address each area satisfactorily may not fit your long-term strategic use of wireless technology.

Next, consider emerging standards, such as those from the SP100 committee, for your strategic wireless network. This committee includes many wireless suppliers and end-users with years of experience and intends to addresses the areas above. If you want to learn more about the standard and its progress or wish to help, you can join the SP100 committee.

Finally, consider other open solution offerings from suppliers who meet the needs discussed in this document. Honeywell is one of these suppliers. Our solution includes:

1. Multi-functionality in a fully integrated wireless network, including low-speed monitoring, high-speed monitoring, control and mobile applications. .

2. Extreme reliability utilizing frequency hopping spread spectrum and mesh technology combined with frequency bandwidth optimization. Fundamentally, this means finding the ideal in a fully thought out system.

3. A single, end-to-end security solution integrated into every wireless device from wireless access points to sensors, providing only one security system to manage and maintain.

4. A system designed specifically for the industrial market with matching power management capabilities that provide “go anywhere” battery-powered sensors that last approximately three years with one-second updates and 10 years on 10-second updates. This provides solid, cost-effective choices to meet your high-speed and low-speed monitoring needs without the associated high maintenance costs.

5. Superb scalability with the ability to cost effectively deploy a few wireless sensors to over 20,000 within the same network. A strategic solution you can start with today and grow with over time.

6. A system not designed around one application protocol, but rather one that was designed for industrial use and to connect to all your legacy application interfaces (i.e. Modbus, OPC, HART, Foundation Fieldbus, etc.).

7. A system that allow suppliers to build one set of products that meet all your needs and quickly provide you the choices you want in one standardized ”wireless strategic cloud”, similar to what 802.11 provides for Wi-Fi products in the commercial market.

Overall, Honeywell can offer a system designed for industrial users that meets their needs today and into the future, that will help:

- Keep their plant, people, and the environment safe
- Improve plant and asset reliability with access to real-time data
- Optimize a plant through efficient employees and processes
- Comply to industrial and environmental standards

More Information

For more information on any of Honeywell’s Products, Services, or Solutions, visit our website Hwww.honeywell.com/psH, or contact your Honeywell account manager.

Automation & Control Solutions
Process Solutions
Honeywell
2500 W. Union Hills Dr.
Phoenix, AZ 85027
Tel: +1-602-313-6665 or 877-466-3993
Hwww.honeywell.com/psH

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