WEBMI & IOT
THE INTERNET OF THINGS
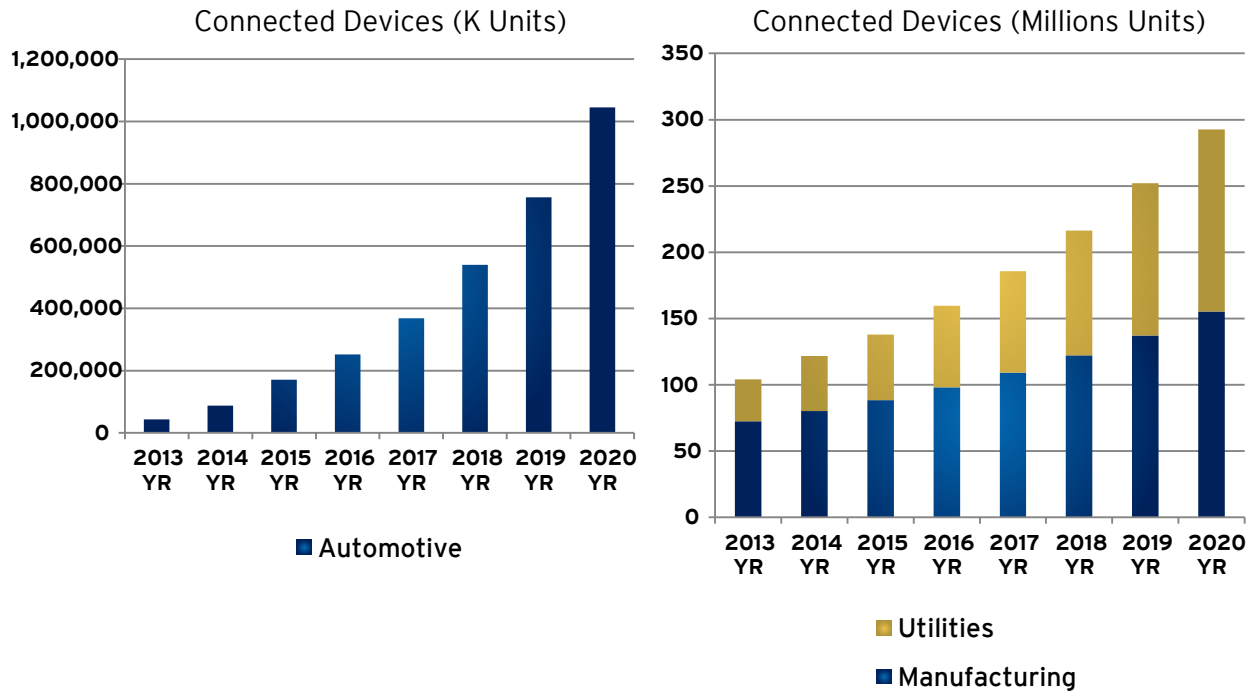### White Paper

web OCS

THE SIGNIFICANCE OF IOT

Contributing to the global trend known as the Internet of Things (or IoT), Horner WebMI instantly connects you to your automated applications. With WebMI, you have the ability to monitor and control your applications easier and faster than ever before, all through your phone, computer, or tablet - providing you with the necessary insights to grow and improve your business.

IoT continues to develop since the term and its underlying ideas were first widely recognized in 1999. And Horner Automation has consistently evolved with IoT in using and developing technologies that allow our controllers to communicate seamlessly with each other and the PC operating system. WebMI continues this tradition.

Research firm Gartner expects the number of connected devices in the Industrial IoT to double in the next five years. The number of connected devices in the automotive sector is expected to grow by more than five times in the same time period, according to Gartner.

Connected Devices (K Units)

Year	Automotive
2013 YR	~40,000
2014 YR	~90,000
2015 YR	~175,000
2016 YR	~255,000
2017 YR	~370,000
2018 YR	~540,000
2019 YR	~760,000
2020 YR	~1,045,000

■ Automotive

Connected Devices (Millions Units)

■ Utilities
■ Manufacturing

The World Economic Forum recently issued an IoT analysis for the industrial sector that highlights some of the challenges and opportunities companies will face with this evolving technology. The organization outlines four phases of the Industrial Internet from near-to-long term: Operational Efficiency, New Products and Services, the Outcome Economy and the Autonomous, Pull Economy.

The entire industry is considered to be in the first two phases of Operational Efficiency and New

Products and Services. At Horner, we are well into the second phase, and WebMI is just the first of an overall IoT plan that we call Web OCS that will move us along into providing the deep, analytical insights that provide even more value to our customers.

HOW IT WORKS

Before WebMI, customers had to piece together overly complex and expensive SCADA systems to deliver the ability to monitor and control systems through the internet. In addition to the initial, sometimes substantial investment in SCADA software, traditional SCADA systems also may require sophisticated PC/server hardware to house the multiple software layers. Plant floor applications require standard hardware to be enclosed within industrially hardened enclosures or expensive application specific hardware may also be necessary; both of these options will also cause the need for climate control options as well.

Additionally, the required hardware for SCADA often times demands experienced IT professionals for initial configuration, commissioning and day to day support. And the life cycle of PC/server hardware is unpredictable, with bio changes and operating system migrations happening constantly.

Now with WebMI, this process is simple, secure and less costly. Horner has created a system that turns each Horner OCS into a web host, allowing customers to access the unit directly online from whatever device they choose. The web hosting software is located in unit's microSD card, which can also be used to log any data a customer needs to make their business more efficient and successful. Each unit can share new insights into the inner workings of a customer's process, and they all can communicate with each other.

Within Horner's familiar programming environment, Cscape programs are automatically converted to scalable vector graphics (SVG)-based HMI screens and HTML5 web publishing code, quickly delivering almost everything you want to accomplish with your application online to your web browser. HTML5 allows communications across all of your devices. Browser independence assures that your Horner OCS screen looks the same on your phone tablet, or computer as it does on the actual unit, giving you confidence that the control is in your hands. And it's simple. The web design within Cscape works within the customer's existing environment, and doesn't require any web programming experience.

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Through an endless option of I/O, data provided from the Horner OCS controllers allows companies to respond more quickly to critical situations or equipment failures. And with WebMI companies can monitor and control applications remotely. For example, data logged from the OCS can indicate an alarm condition, which could be addressed in real time.

THE HORNER WEBMI IMPACT

Some concerns about Industrial IoT adoption remain and will continue to be addressed by the entire industry, mainly interoperability and security.

First, Horner has addressed the interoperability of its product line through maintaining our own software, Cscape, which works across Horner devices and standard PC operating systems. Horner has also adhered to industry standard protocols and components.

Our products also are easily deployed into existing networked systems, so there's no need for a customer to tear down an infrastructure that already works.

One example of such an application is FlowCore Systems, a North Dakota oil and gas company that uses Horner XL4 controllers with our Model 6 I/O. The company not only used the -106 I/O in the XL4 to connect four pressure transducers and a thermocouple for their pumping system, but also connected the XL4's remotely, enabling them to monitor conditions such as flow, temperature and pressure, as well as send email and text alerts to workers who can make changes as necessary. Some FlowCore workers have dozens of wells they monitor every day, and before the company tied in the Horner XL4s, these workers had to physically drive around to visit each well to make sure everything was running smoothly.
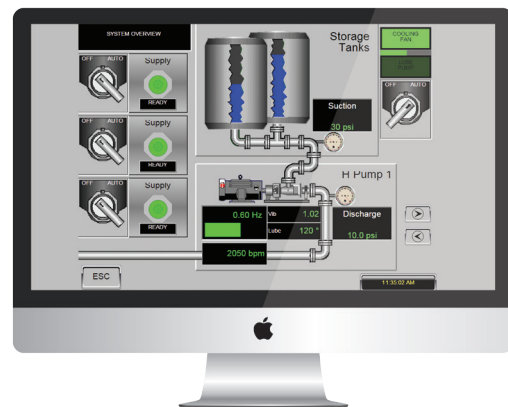
"**The Model 6 XL4is a perfect solution for us**," said FlowCore Systems President Chuck Black.

With connected factories, farms, buildings or other work areas, the decoupling of the worksite and the machines in the field affords new levels of flexibility. Where and how work is done allows customers to increase their knowledge base, with real-time access to data from multiple assets.

As for security, Horner has designed WebMI to have several security levels customers can define. Within Cscape, administrators can assign a level of access to specific users and configure their associated passwords. These usernames and passwords are highly encrypted and stored on the microSD card.

Not only can you control who accesses certain screens, you can control who has the ability to control the screens they are allowed to access. Graphics objects on the screens can also be configured to have an associated access level. This level will determine which users can interact with this screen object, based on their own access level. For example, if a touch button is configured to have a user access level of 4, only OCS users that have logged in as a user with access level 4 or higher can select this button object.

WebMI is also designed to scale as your business expands. You may start with a handful of WebMI devices, but as you need more, Horner offers manageable packages to bring on line more devices to work within the scope of most applications and organizations. Even if a customer has devices that aren't yet accessing the internet, Horner can provide a license to ensure that when they come online, they are ready for WebMI and the Internet of Things.