Sensabililty IO

Next Generation Industrial Automation and Data Acquisition

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Simple and Secure

We start with a Next Generation HMI (Human Machine Interface) that combines high availability with big data systems. Then make it simple to configure and deploy. This Next Generation HMI enables engineers to think of a sensor or motor as an object instead of a set of digital registers. Once the infrastructure is in place, it allows you to export the data that you are already collecting into the big data management platform of your choice securely and easily.

Operational Technology – the software and hardware that runs most nations utility, manufacturing, and building management systems – is not able to meet the security and scale demands for Digital Transformation. Digital transformation is the simple act of creating data for everything that is produced or where energy is consumed. Industrial Control Systems are based on legacy technology, hampering the ability to change because of the very protocols and architectures on which they were created. Simply put, the problem is that hardware and software are tied to each other.

The Industrial Internet of Things (IIoT), sometimes called Industry 4.0, has a rapidly expanding foot print, but the current process does not scale. Flexible, easier to deploy, automated infrastructure must support and extend those legacy systems while incorporating new technologies. This new system will create intrinsic security and iterate with newer capabilities, while maintaining robustness found in older systems. Internet-scale technologies must be brought to bear on this problem but not ignore the exposure that is intrinsic to the Internet. It is in this opportunity that SensabilityIO will grow quickly and create market transformation for Industrial Control Systems (ICS) and the Operational Technology (OT) market.

SensabilityIO is a platform that manages and secures a growing infrastructure. The SIO platform will become the de-facto bridge from newer to older infrastructure. Collapsing many data acquisition layers into a single enterprise services bus is the centerpiece of why we think there is a huge opportunity in this sector with our strategy. The SIO platform will allow our users to utilize big data to improve product quality and reduce down-time. The initial plan for the company is to offer a freemium model to customers to enable data acquisition and monitoring and control of industrial control systems by offering a virtual appliance. Defining the freemium model will include support for five Intelligent Electronic Devices per virtual machine. The limitation is that only a single virtual machine can be used for any given process.

In a Proof of Concept, a hardened hardware appliance can be deployed to find current processes in place and then leverage new web interfaces and simple data management like that found within large clouds, without needing connection to the cloud. This solves a major pain point for many smaller to midsize corporations in manufacturing, utilities, and logistics. The SensabilityIO platform will overlay their older process automation and allow the customer to integrate legacy equipment with "Industry 4.0" that is driven by data.
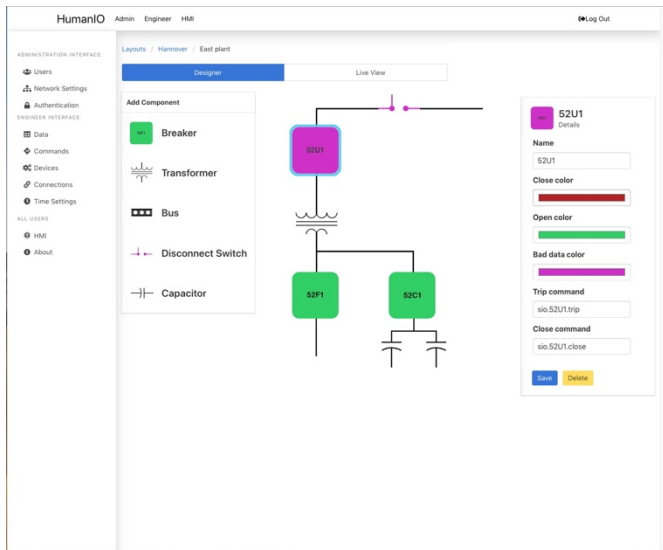
When engineers plan to create a new process, it can take months and sometimes years to write code for control mechanisms. Data points must be manually mapped through several layers of infrastructure. As such, the system integrator must have an intimate knowledge of the hardware and software at every step of the way. Integration with new frameworks requires becoming intimately familiar with yet another technology. This can cost tens thousands of dollars software alone per software installation and over 3x as much in software and hardware integration and testing. This paradigm does not scale to the IIoT and leads to Supervisory Control and Data Acquisition systems with just enough data to make them useful for currents needs; future considerations are too expensive to even consider.

The SIO platform is delivered on virtual infrastructure with continuous delivery which is a software development approach in which teams produce software in short cycles. This ensures that the software can be reliably released at any time and, when releasing the software, without doing so manually. It aims at building, testing, and releasing software with less cost, greater speed, and higher frequency. The approach helps reduce the cost, time, and risk of delivering changes by allowing for more incremental updates to applications in production that can cause outages. This will allow the platform to democratize the deployment of new capabilities possibly disrupting many current markets. Clustering technologies, security, and zero-touch automation is used to deploy a tiered control system that maintains data integrity and delivers real-time control of the plant. The solution will enable continuous integration into the energy, manufacturing, and transportation sectors.
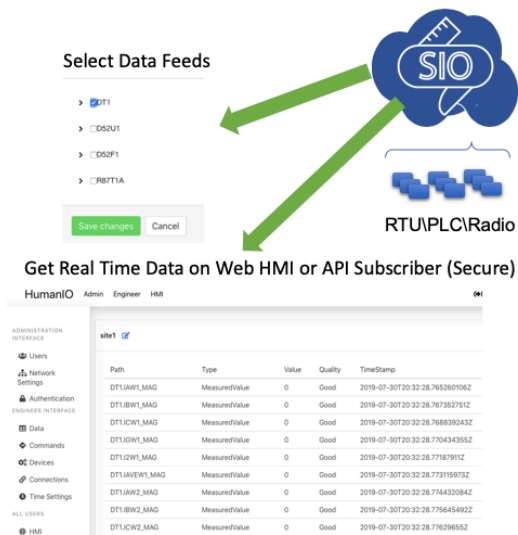
Our first product in the portfolio is a Human Machine Interface (HMI) replacement called HumanIO. This is a virtual appliance, decoupling the product from the need to manufacture expensive hardware. The data and management are separated and delivered through technology that more closely resembles highly available cloud architecture. The modules that bridge to older infrastructure is based on a pluggable architecture delivered through the virtual machine. This will bring a host of security features currently available to cloud architectures. Delivery and security is built on a modern set of encryption protocols and enabled by default.

SIO is a pluggable platform that will deliver industry proprietary communications to modern data lakes and centralized control systems. This will allow operators and

engineers to simplify onsite hardware and collapse billing and old communications systems into a single API layer. This will simplify operations and close the security gap in the systems that deliver data and control.

A touch-enabled, secure interface is presented to the users at the plant or remote operations center. The interface will emulate real physical hardware through animations that accurately depict the operation of the controlled device.

Market Analysis

Industrial Automation is due for one of the largest growth periods in modern history. Typically referred to as the 4th Industrial Revolution, robotics and automatons will comprise more than 50% of the workforce by 2025. That is a huge difference in current rates. The growth in this area will hockey-stick within the next five years.

Market Segmentation

Energy –

Upstream – Exploration companies and renewable energy companies comprise the first and most important opportunity with Sensability.IO. These companies struggle with distributed infrastructures that may have mobile requirements as well as super-rugged compliance needs. These large distributed enterprises will have the most to gain with the new architecture for SCADA. Our features of auto-discovery and learning of a remote site, zero touch deployment, and adaptive sensing and trend analysis.

Midstream – The midstream sector involves the transportation (by pipeline, rail, barge, oil tanker or truck), storage, and wholesale marketing of crude or refined petroleum products. Pipelines and other transport systems can be used to move crude oil from production sites to refineries and deliver the various refined products to downstream distributors. Natural gas pipeline networks aggregate gas from natural gas purification plants and deliver it to downstream customers, such as local utilities.

The midstream operations are often taken to include some elements of the upstream and downstream sectors. For example, the midstream sector may include natural gas processing plants that purify the raw natural gas as well as removing and producing elemental sulfur and natural gas liquids (NGL) as finished end-products.

- Barge companies - Fourchon, LA
- Railroad companies – Upstate New York and Boston
- Trucking and hauling companies – Alabama and Tennessee
- Pipeline transport companies – Houston, TX
- Logistics and technology companies – Houston, TX
- Transloading companies – Houston, TX
- Terminal developers and operators – Houston, TX

Downstream – The downstream sector is the refining of petroleum crude oil and the processing and purifying of raw natural gas,[1] as well as the marketing and distribution of products derived from crude oil and natural gas. The downstream sector reaches consumers through products such as gasoline or petrol, kerosene, jet fuel, diesel oil, heating oil, fuel oils, lubricants, waxes, asphalt, natural gas, and liquefied petroleum gas (LPG) as well as hundreds of petrochemicals.

- Refineries
- Solar Power Arrays
- Wind Farms

Manufacturing –

Transportation – American Freightways, Schneider, JB Hunt, Werner

Logistics – This will mostly be in the Energy markets. Haliburton and Schlumberger.

Robotics – Hitachi, Motoman, Panasonic

Objectives

- Develop full Suite of SCADA products with a focus on collapsing many of the data and control layers together in a standards-based zero-trust architecture for real-time for Data Acquisition and Distributed Control

- SIO is a channel-first company - our reach is amplified with strategic large partners with a focus on security and scale for global projects

- SIO leverages strategic hardware partnerships with large manufacturers

Products and Services

The initial product offering is based around one product in the Human IO product line, our next generation HMI (HIO). This will receive data from the IED (Intelligent Electronic Devices) and host plugins that will use process control protocols and provide a user interface for command and control of the remotely operated assets. Current SCADA and DCS offerings require anyone making changes to have intimate knowledge of the system to properly locate device statuses and measurements. We will differentiate ourselves by providing meta-tags that allow the user to define objects and their properties. This will allow users of the Client software to receive statuses without having to know which IED is taking the measurement or monitoring the status.