# A PRACTICAL FRAMEWORK FOR IIOT EDGE

The Industrial "Revolution" at the Edge

Have you accounted for the "edge" in your IIoT journey? This software-based model radically improves operational efficiency bringing data governance, real-time analysis and decision-making to the most optimal location close to action, reduces backend cost, solves critical latency-depending issues while improving serviceability of devices.

Vixtera is developing the IIoT edge software (ViEdge) and delivering integrated solutions for the mission-critical applications within asset-intensive industries. The ViEdge provides industrial enterprises with out-of-the-box operational experience delivering broad and robust device, event and data management, automated mass installation and scalable deployment governed from a Single Pane of Glass dashboard. It detects a problem and promptly identifies the root cause helping to prevent potentially catastrophic failures and costly track rolls. The patent-pending algorithms and techniques accelerate asset management and decision making, expand operational visibility and reduce the cost to automate asset and infrastructure radically improving operational efficiency of the heterogeneous IIoT environment.
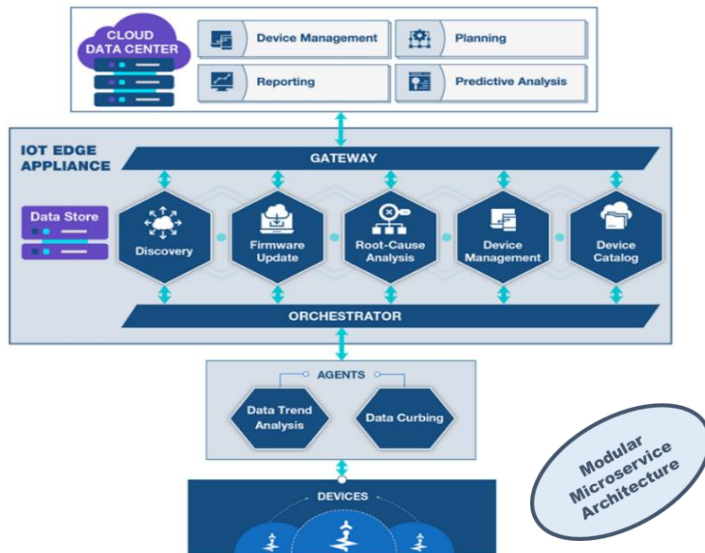
Out of the BOX

- **Ubiquitous Connectivity**
- **Bulk Config and Upgrades**
- **Multifaceted Data Curation**
- **Root cause analysis**
- **Real-time failure detection**
- **Predictive Analysis**
- **Up to the minute view**
- **Asset Optimization**

The Hidden Truth of IIoT Device Connectivity

In the perfect world, you pick a communication protocol, develop a driver and connect the device. That's what they said. But, even being in Lalaland, surprise, you have to code again to adapt the driver, and again to deploy it. And your troubles are not over having to "mingle" with code, again, while upgrading the software – think about large-scale deployment. Thus, the **enormity of different types of IIoT devices** requires a far-reaching approach to solve this problem.


Vixtera **developed and patented technique allows effortless onboarding and maintenance of ANY device** without the needs for a driver or code. You simply create a JSON/YAML/XML – like text file while configuring a **declarative protocol specific to your device** - minimum or no effort is required. The protocol can be easily customized altering device's configuration by merely copying/pasting this file to perform frequent changes or upgrades. The protocol's macros enable quick-n-easy fine-tuning of devices' reporting instantly responding to ever-changing condition of IIoT environment.

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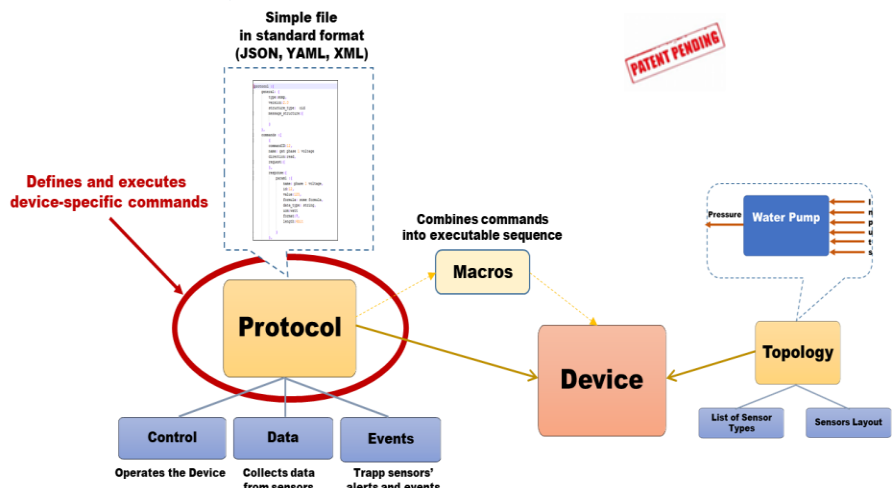
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Identifying IIoT Problem is like Looking for a Needle in a Haystack
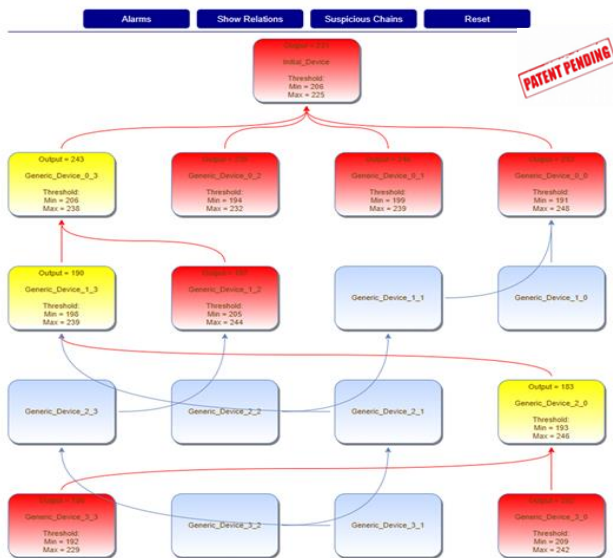

Running mission-critical applications and working in highly-constrained environment leaves no room for failure and requires a solution that: a) detects irregularities and **pinpoints a failure in real time**; b) provides mechanism for prediction and prevention of potential problems.

Vixtera developed an algorithm helping to identify IIoT system anomalies and a source of failure in real time. The patented methodology makes certain assumptions about input and outputs of malfunctioning devices, its internal and external environment – all in plurality of connected ecosystem. It then correlates that information to parse out actionable interconnected events **promptly identifying root cause and a chain of events that's leading to a problem** providing unprecedented ability for instant gratification and radical improvement of device serviceability and use of resources.

The failure event can be used as an "etalon", a reliable label, for automatic NN training and AI/DL modeling.

Building Foundation for Reliable Predictive Services

One of the hardest problems in Deep Learning (DL) is collection and identification of data that correlates with the outcome you want to predict. In order for neural network (NN) to be used, it has to be trained. Each training data set consists of input and "etalon" data sets. The "etalon" data set is used for comparison between data sets generated by NN and desired data sets. The biggest challenge with today's NN training is that **a huge army of labor is needed to manually label information and train AI** systems – a time-consuming, costly and error-prone process. **Vixtera developed and patented Root Cause Analysis algorithm explicitly identifying and using cause of failure as a reliable source (label) for auto-generation of Neural Network (NN) training data sets**. This method provides significant uplifting helping to eliminate manual, error-prone labeling for AI/DL modeling providing machine-based, automatic, accurate and dependable source for predictive analysis. Therefore, allowing generation of trustworthy data for variety of IIoT applications and services.
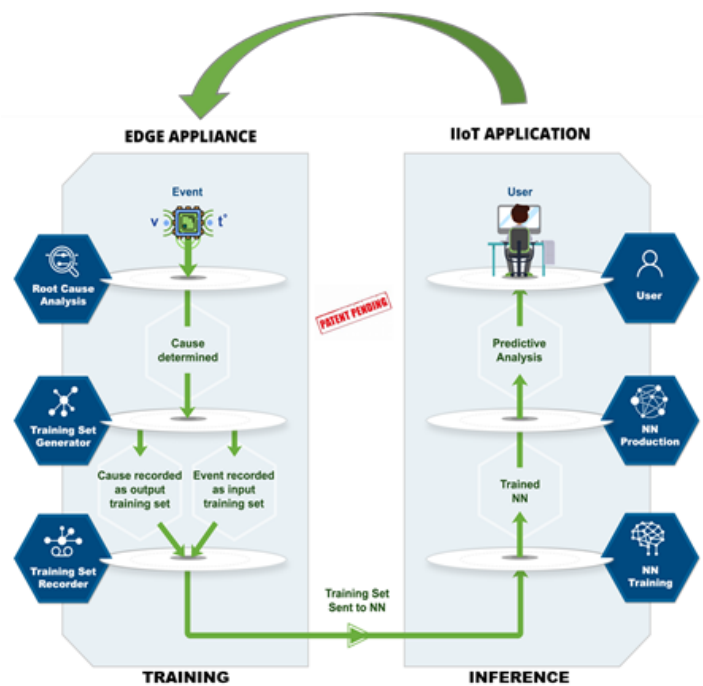
We make it Simple to Facilitate your IIoT journey

To get you started, we offer an extensible software framework with core components and empower you with variety of services and smart applications to assist with rapid productization of your solution, integration with of OT/ IoT platforms and clouds. Get in touch!

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