

SAVED AT THE EDGE !

How WonderBiz helps the world's largest manufacturers save \$1 trillion a year with predictive analytics at the edge

What was the problem?

Manufacturers wanting to implement a Predictive Analytics Solution often face a dilemma: How to prevent **Latency (both data & decision), loss of Fidelity, and the humongous Costs of cloud storage**, while planning for a definitive Predictive Analytics Solution? The answer is, of course, to implement a Predictive Analytics Solution, right at the Edge - an Edge Analytics Solution!

And that is what our Customer, a major Industrial Automation OEM, set out to do. Assembling a crack team of highly skilled and experienced Architects & developers to get an Edge Analytics Solution out in less than two years. A product that would easily address **unplanned downtimes, asset replacement costs, and optimize production**. A product that would enable quick & efficient decision-making without costing a lot of OpEx.

The Solution had to be as generic as in a **Technology Platform** to abstract much of the common Framework capabilities. And at the same time, be specific for a particular industry (Oil & Gas, Mining, Water Management, Energy) in the form of **Industry Accelerators** to override specific business logic for that particular industry. Realizing such a Solution was no mean feat, because it had to have the right architecture for the Technology Platform to abstract modules such as **Configuration, SCADA Integration, Gateway Management, Analysis**, and also to provision interfaces for plug & play Industry Accelerators that would separately implement **Machine Learning Models & the User Interfaces** needed to solve specific Customer problems.

But where was the Dev Team? It needed to be a bunch of skilled developers with multi-farious tech exposure (**Web, Edge, Industrial Protocols, Machine Learning, DevOps, Container technologies**) and the ability to switch rapidly between POCs and production. That too at the cutting edge - where there weren't too many references and domain expertise.

1. The IoT Edge Runtime component that runs on the Edge Gateway is used to collect data from **Field Devices** such as Sensors, Drives & RTUs. This is a Linux-based rugged machine that can embed itself in countless types of endpoints and employs multiple sensors for precise analytics.
2. Communication is made secure through secure communication protocols like **WireGuard** and Industrial Standards for data exchange, such as the **OPC UA and ModBus**, to capture Vibration, Speed, Temperature at a regular interval poll.
3. This largely involves Time Series data, but also the Image & Video streaming data, is then stored and processed at the **Edge Gateway** using **Edge Databases** as well as componentized Storage **Containers** like Data Lake & Blob Storage.
4. **Machine Learning Models** that have been previously trained (supervised and unsupervised) are then deployed on this processed data to aggregate KPIs, uncover Events, and send out Alerts. Thresholds, Correlations, and Jumps are recorded, inferences are drawn, and marked for Dashboards.
5. Finally, only the data that needs to travel to the **Cloud** does so and is presented to the decision makers in the form of **Business Intelligence Dashboards** that can be configured. Analytical Charts, Predictions Graphs, and automatic flagging of Abnormalities are presented to the decision makers for Augmented Intelligence.
6. These are presented to end users in the form of modern, responsive **Web Clients** that have the necessary access privileges based on Users and User Groups.
7. Supporting systems such as the **Configurator** are used to configure Edge Gateways, Site, User Access & deploy Containers. In addition, these provide Log Access & help to set up the communication to the Cloud.
8. **Cloud-based IoT Hub** is used to deploy & push Containers to the Gateway. Cloud-based **Data Flow Tools** are used to connect and orchestrate multiple cloud-based services in such a system.
9. **Retraining of Machine Learning Models** constantly happens based on expert tagging by Subject Matter Experts and Data Scientists to uncover new patterns and better accuracy. Models are also shared across asset plant facilities for cross learning. This kind of a closed loop is important to take the system towards Full Autonomous Control.



What was the result?



In the **60 months** that have followed, the initial Proof of Concept has now undergone at least **4 iterations** and has been deployed at several customers in the Oil & Gas, Waste Water, Mining, and Manufacturing operations. The Customer has even coupled this Solution with their **VSD drives, compressors, and pumps**, and upsold, that provides proactive Real-time analytics, Predictive insights on mechanical and electrical faults - months in advance. It has been yet another success story for the partnership for our Customer who has been absolutely delighted with the innovation, skills, and commitment shown by the WonderBiz Dev team.

What does the customer say about WonderBiz?



“We have the pleasure of collaborating with WonderBiz Technologies on a critical **R&D initiative at Schneider Electric**, and their contribution has been nothing short of exceptional. From the outset, their developers and testers demonstrated a deep understanding of our technical requirements, seamlessly **integrating into our agile workflows and consistently delivering high-quality solutions**.

Their **proactive** approach, **attention to detail**, and **commitment** to excellence significantly accelerated our development timelines. The testers were meticulous in identifying edge cases and ensuring robust quality assurance, while the developers brought **innovative thinking** and **technical expertise** that elevated the overall impact of the project.

What truly set the WonderBiz team apart was their **professionalism, adaptability, and collaborative spirit**. They not only met our expectations but **often exceeded** them, making them a trusted partner in our innovation journey. We thank WonderBiz for the wonderful job in helping us develop our applications and wholeheartedly recommend WonderBiz to any organization seeking a reliable, skilled, and forward-thinking technology partner.”

– **Neha Bulchandani, CSM® | SAFe 6.0 | CSPO®**
Scrum Master, Edge Analytics Solution