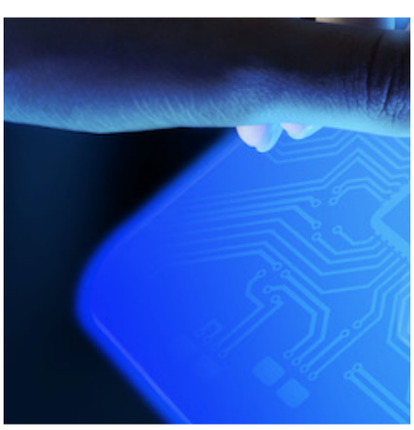
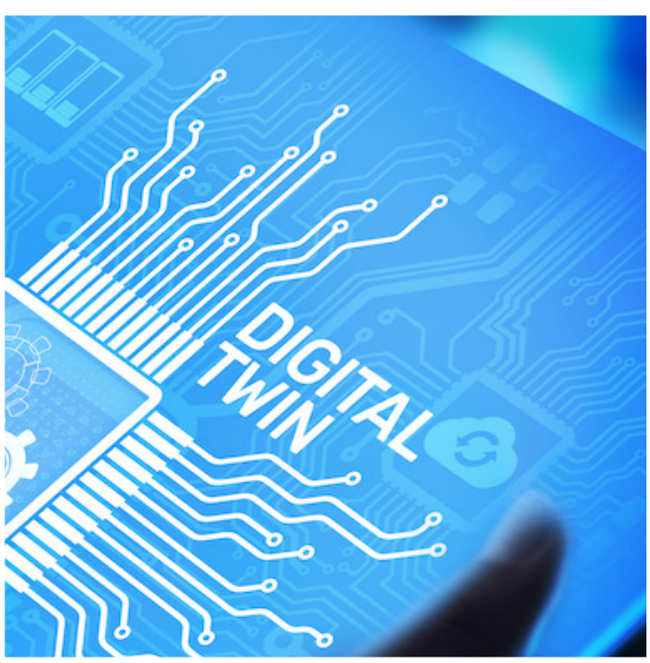
Bruviti

Bruviti Machine-Learning Capabilities

WHITE PAPER





Service organizations are powered by data

Service organizations are driven by the successful assimilation and application of enormous volumes of data. Whether it's technical bulletins, repair notes, service records, product information, customer information, or IoT data from connected devices, the ability of the service team to understand, process and apply this information in the right context largely determines whether it will succeed in its mission to deliver the best service to customers while managing costs.

As digital transformation initiatives proliferate across the organization, service leaders are also considering how to apply digital technologies to improve their operations. This white paper is a primer for non-technical service leaders looking to become more fluent in the basic concepts of machine learning and now these can be applied in their organization.

The process begins with data orchestration

At first glance, the data-driven service organization looks like a good candidate for advances in machine learning and artificial intelligence, because service teams consume and create volumes of technical information, and the process to rectify a customer outage or product issue has generally been performed many times before, with predictable outcomes.

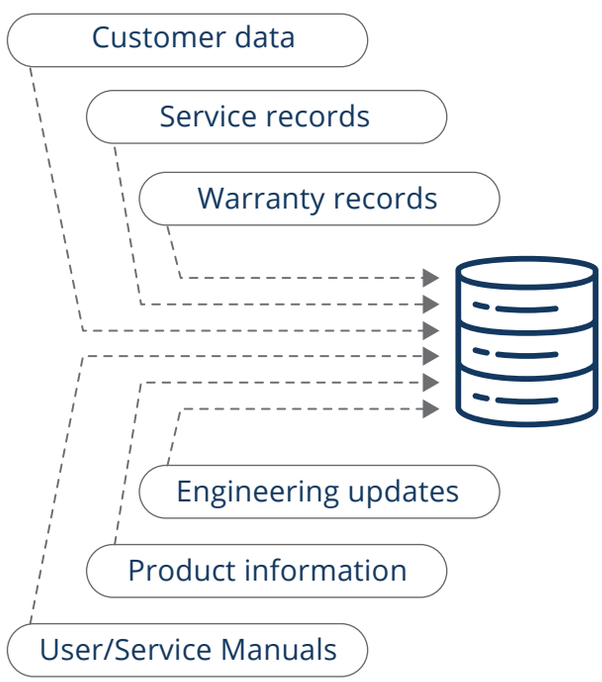
The first step in the process is to identity and characterize the necessary information: customer data, service records, call logs, warranty records, engineering updates, product information, service and user manuals, and information streamed from units in the field.

The challenge is that this information is not always readily accessible or easily consumable. Often, it resides in silos scattered across the organization, where it is stored as unstructured, raw data in its native format.

Before we can even begin to analyze and activate this data to gain operational insights, it must be identified, understood, scrubbed and normalized, and then made accessible for analysis. We refer to this process as data orchestration, and it enables us to then apply the science of machine learning and artificial intelligence.

To accelerate this critical phase, Bruviti has developed a data orchestration platform and methodology that streamlines all of the heavy lifting involved to make a service organization's data actionable. Typically, the process is:

– Identification of relevant data stores from around the organization
– Data convergence (integrate all data onto a single platform)



Machine learning model development

Let's first define what we mean by a machine-learning (ML) model. Like any model, it's essentially a representation of a real-world process. In this case, our ML model is a file of the underlying operating data (from the data orchestration phase) that defines our process and an associated algorithm that defines the actions and rules that need to be performed.

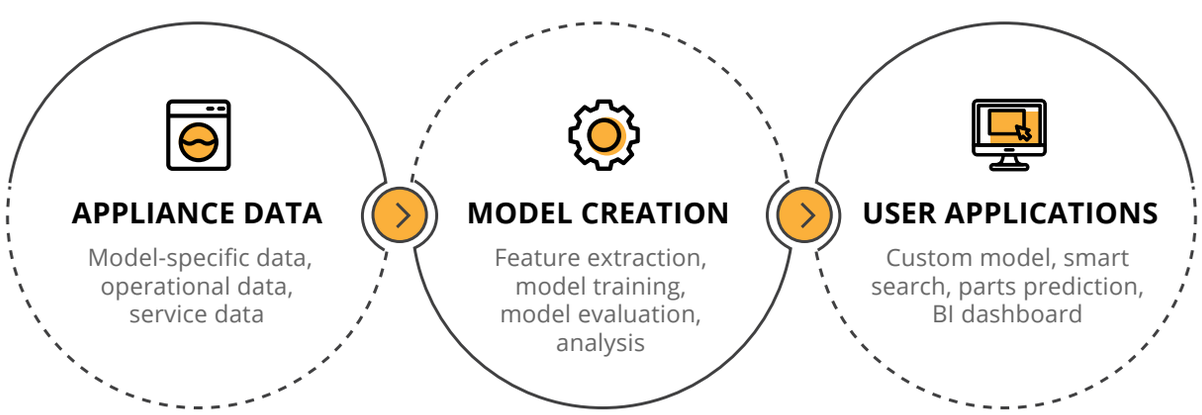
Conceptually, building a machine learning (ML) model that can suggest the best course of action is like most software development projects. First, define the problem you're trying to solve and sketch out potential approaches. Next, prototype the solution. Then test it to see if it solves the problem you set out to address.

The process iterates through ideation, prototyping and testing until the ML model is ready for further development, which is where we validate it with a broader set of real-world data. Using this data, we iterate through a 'training' process to perfect the model, qualify it, and deploy it into production. Even then, we continue to train it as we observe its performance in the real world and as more input data becomes available.

Example: a ML model for a washing machine

Let's apply this process to a fairly simple product: a top-loading clothes washer. As we sketch out the prototype ML service model for this product, we can apply some basic assumptions. We know that a top-loader washer has two basic components (the tub and the agitator), and we know the causes of failure with this type of machine. We also know that noise, vibration, and whether the unit is secure and leveled are factors associated with service issues. From these data, Bruviti creates a base model for this class of appliance.

Next, we apply what we know from the manufacturer of a top-loading washer. For example, unique attributes of a specific model, such as failure rates of specific parts or problems associated with a specific batch of units manufactured on a certain date. This is information we derive from the data orchestration process, described earlier. Using all this information, we can enhance the base model to formulate an appliance-specific model.



Training our model

Now we add more information to the model to expand its abilities. All of the information we captured during data orchestration is classified and tagged to define its relevance for this model. For example, our customer complaints records are indicators of what is wrong with the unit, whereas service records are indicators of what steps were taken to rectify the problem and which parts were used. As we add more training data, we observe how the model's output aligns with our desired output, and tweak and correct the model to perfect its performance.

Let's say we want to predict parts needed to repair the agitator. We might deploy the model for a certain number of users and observe results, then correct, then re-introduce corrections into the model so it learns from its mistakes. It's also important to understand that any ML model must evolve over time as we derive new data, new variations of the appliance are released, and as new manufacturing and service data becomes available.

Deploying the ML model as an application

Once our ML model is ready for deployment, we can use it to enhance existing service processes as the basis for an AI application. For example, we could use it to add expert diagnostic abilities to a website chatbot capable of helping customers resolve basic technical problems. Similarly, a more sophisticated version could provide expert guidance to help contact-center agents diagnose more complex problems, identify what will be needed to rectify the problem and what parts will be needed, and then hand the ticket off to the service team for action.

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About Bruviti

Bruviti's enterprise software platform applies data analytics and AI to accurately triage technical support issues associated with field-based equipment. By dramatically enhancing the diagnostic and repair capabilities of both contact centers and field-service organizations, Bruviti improves overall customer satisfaction and reduces costs.