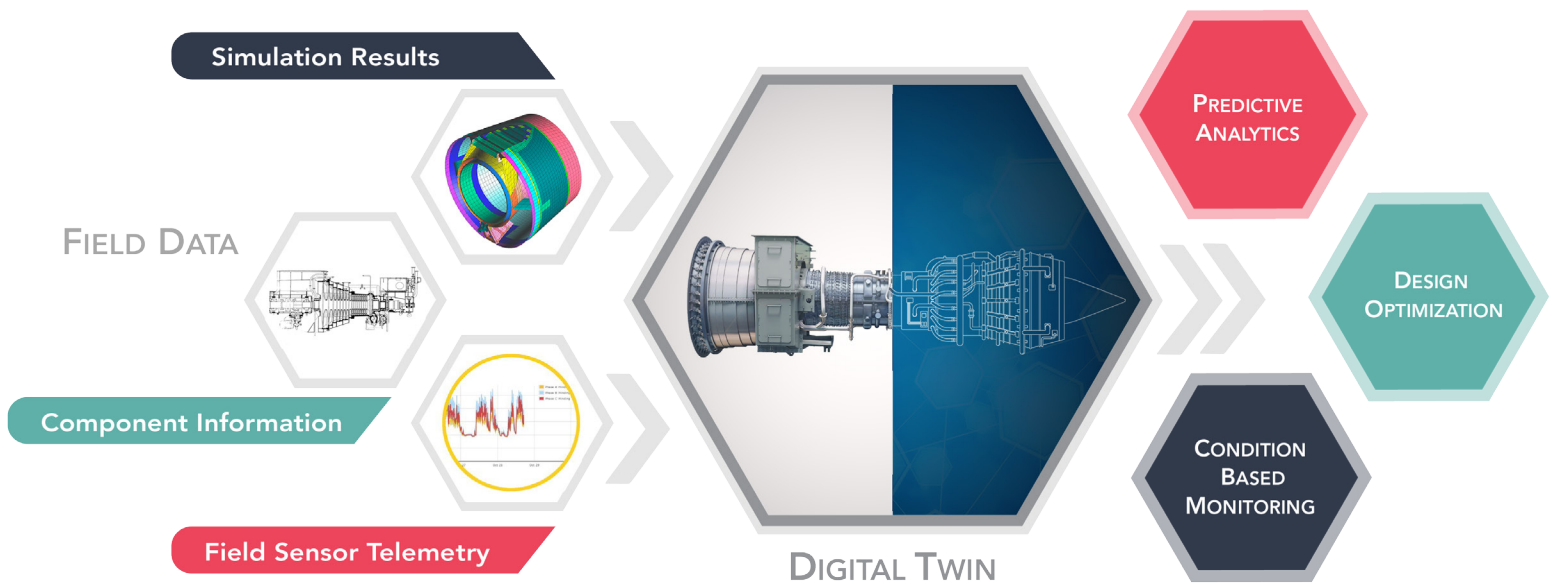


USE CASE:

A Digital Twin is the digital copy of an asset's physical representation (geometry), its behavior (simulations) and its history (telemetry).

A Digital Twin must:

1. Be specific to an asset that has a unique serial number.
2. Have telemetry data specific to that serial number.
3. Have geometry and simulation data based on either product or serial number.
4. Have the ability to predict an asset's behavior.



SOLUTION: Peaxy offers two types of Digital Twins: the **Physics-based Digital Twin (PB-DT)** and the **Multifaceted Digital Twin (MF-DT)**.

A Physics-based Digital Twin (PB-DT) is a digital representation of a physical object and simulations of its physical behaviors under normal or abnormal working conditions. The object could be a component (e.g. gear), sub-system (e.g. gearbox) or system (e.g. drive train). The PB-DT predicts physical behaviors of an object under a load. For example, it could track strains or vibrations at certain points that are measured by sensors in the field. All digital twins of a single component (such as a gear) begin with the same geometry, materials and simulation data, such as Computational Fluid Dynamics and Finite Element Analysis.

The Multifaceted Digital Twin MF-DT moves beyond orchestrating only physics-based models. It can orchestrate heterogeneous models and algorithms that aim to predict system-level physical and economic performance simultaneously. MF-DTs are generally applied at the system level.

While engineering teams might care more about the physical behavior of an asset, a customer might care more about the economic models an MF-DT incorporates. A wind farm operator, for example, might be concerned with the physical performance of each wind turbine, but she might also want outputs on key indicators like economic viability, cash outlays and build schedules. This information can save countless weeks, or even months of configuration work during the bidding process.

Digital Twins help companies properly predict events for their assets in a way that hasn't been possible before. Just like their physical counterparts, Digital Twins require good "data maintenance" at the serial-number level. A "virtuous data circle" — moving from field sensors, to the Digital Twin, then back to the field through improvements in the next design cycle — is a game-changer for large industrial equipment manufacturers, suppliers and builders of large facilities.

Peaxy provides the expertise needed to build a Digital Twin as well as the hyperscale data architecture (Aureum).