

# Predix Overview



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# Predix Overview

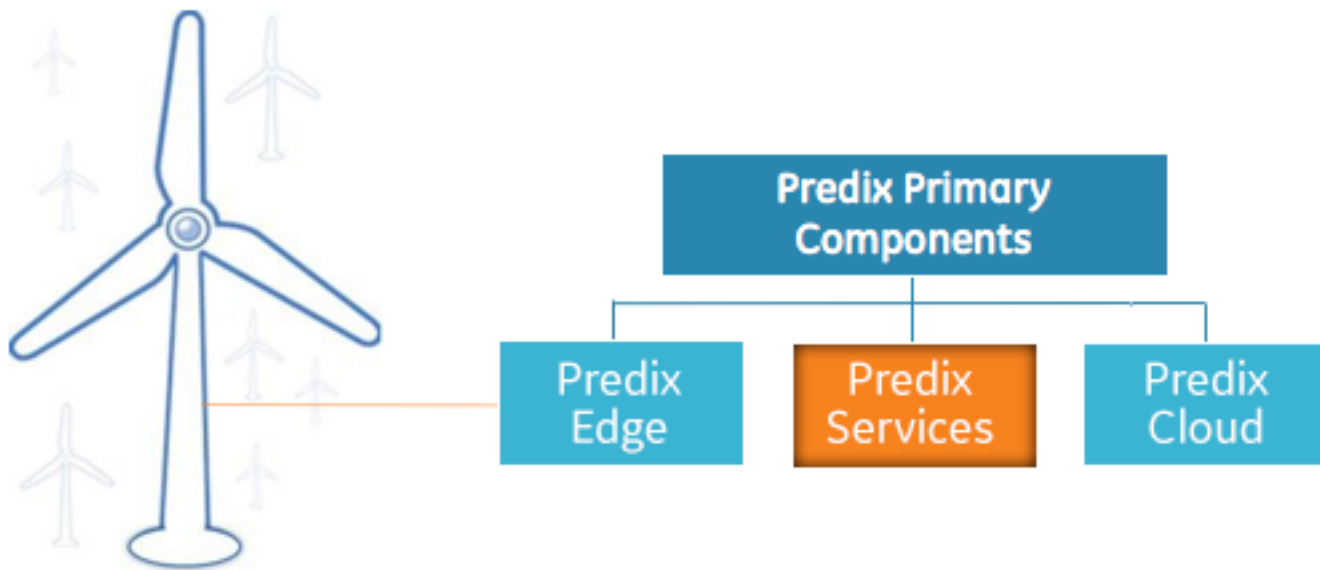
## What is Predix Platform?

The Predix platform is a cloud-based Platform-as-a-Service (PaaS) for the Industrial Internet.

As it connects machines, data, people, and other assets, the Predix platform uses leading technologies for distributed computing, big-data analytics, asset data management, and machine-to-machine communication. The platform provides a wide range of industrial microservices that enable businesses to increase productivity, and it provides the following benefits:

- Enables the rapid development of industrial applications.
- Minimizes developer involvement in managing scale and hardware.
- Promotes quick response to customer requirements.
- Provides customers a single point of control for the assets they own.
- Serves as a foundation for an ecosystem of companies and developers that support the Industrial Internet.

To understand the Predix platform, let's start with an industrial asset, such as a wind turbine, and see how it is connected to the primary Predix components: Predix Edge, Predix cloud, and Predix services.



### Predix Edge

Predix Edge is the software layer responsible for collecting data from industrial assets and pushing it to the Predix cloud, as well as running local applications, like edge analytics. Predix Edge is available on turnkey gateways and virtual machines.

### Predix Services

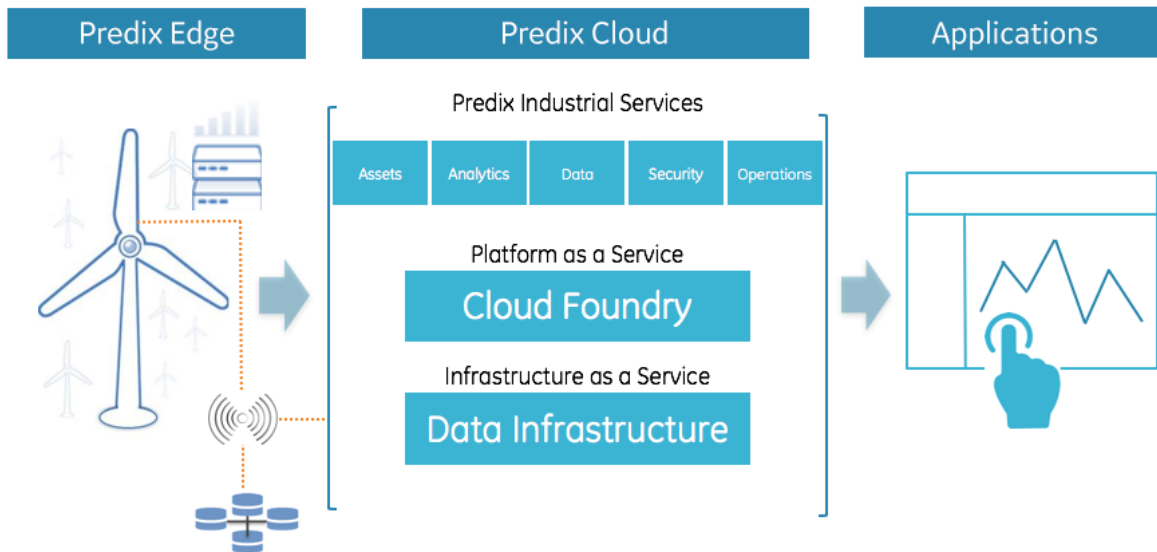
Predix provides industrial services that developers can use to build, test, and run industrial internet applications. It also provides a microservices marketplace where developers can publish their own services as well as consume services from third parties. The Predix platform enables our customers and partners to optimize their industrial business processes.

### Predix Cloud

The Predix cloud is a global, secure cloud infrastructure that is optimized for industrial workloads and meets strict regulatory standards for such industries as healthcare and aviation.

## Predix Platform Architecture

One example that illustrates the architecture of the Predix platform is a wind farm application that collects data from turbines and pushes it to the cloud.



The wind turbine and the turbine farm sit on the “edge” of the Predix platform. Using Predix services, you can receive and analyze the data from the wind turbine sensors. You can also monitor and optimize the operation of the turbine to gain maximum value of this asset. This enables you to detect anomalies and help predict outages before they happen, improving wind farm reliability, optimizing just-in-time maintenance, and reducing turbine downtime.

Predix Edge is a hardware and software solution that uses data collected from the sensors and uses edge analytics to monitor the status of industrial assets. If something out of the ordinary is detected, Predix Edge can shut down a turbine before damage occurs. With Predix Edge, data scientists can store and analyze data across the wind farm. They can look for trends over time, identify new patterns, create new edge analytics, and push that information back out to all of the wind turbines.

Application developers can use the industrial services on the Predix cloud to build, test, and deploy Industrial Internet applications. This custom-built cloud data infrastructure has enhanced security controls and advanced data processing and networking capabilities. From improved analytics, real-time asset optimization, or predictive maintenance, the Predix platform is designed to support the continuous improvement of industrial business processes.

## Predix Microservices

The Predix platform employs a Cloud Foundry-based architecture that supports microservice use and delivery. Microservices deliver functionality as a set of very small, granular, independent collaborating services.

Predix platform microservices simplify the operation and management of deployed applications, IT operational complexity, solution integration, and solution management. Once a solution has been deployed, updates are simpler and more efficient, eliminating code recompilation and streamlining operations.

The Predix platform provides a wide range of industrial microservices to create predictivity solutions which enable businesses to increase productivity through asset performance management, operations

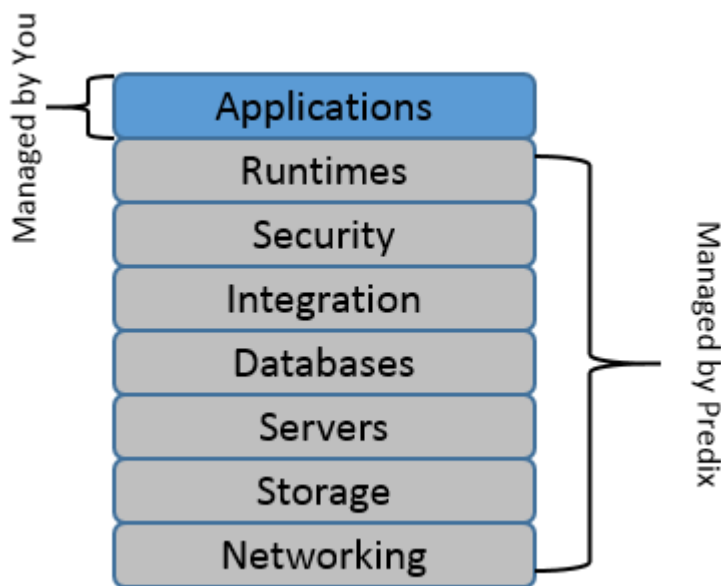
optimizations, asset modeling, data ingestion, data storage and manipulation, and security for all back-end applications.

## Predix and Cloud Foundry

Predix is built on Cloud Foundry, an open source Platform-as-a-Service (PaaS) implementation that helps reduce your development costs.

Cloud Foundry supports the software lifecycle from initial development through each testing stage to deployment. Cloud Foundry's advantage is its strong support of continuous delivery (CD) software strategies. Cloud Foundry provides the following benefits:

- Application lifecycle management
- Centralized management of applications
- Distributed environment
- Easy maintenance



See also [Why Does Predix Use Cloud Foundry?](#)

### What You Get When You Register for Predix

When you register for a Predix account, a Predix administrator creates a Cloud Foundry user account for you and gives you a Cloud Foundry org and space. An individual account gives you one org and one space within that org. An Enterprise account gives you one org with one or more spaces.

### What is a Cloud Foundry Org?

Cloud Foundry describes an org as a development account that an individual or multiple collaborators can own and use. All collaborators access an org with user accounts. Collaborators in an org share a resource quota plan, applications, services availability, and custom domains. An org allows you to create a multi-tenant environment.

All orgs include a quota plan, and all activities within the org are counted in the quota plan for the org. A quota plan tracks all activities within the org as well as data such as memory that is used by applications, the services they use, and disk usage.

An org always includes at least one space, but it can contain multiple spaces. You can define the org any way you want. For example, your org can correspond to a business division.

### **What is a Cloud Foundry User Account?**

Cloud Foundry describes a user account as an account that represents an individual person within the context of a Cloud Foundry installation. A user can have different roles in different spaces within an org, governing the level and type of access they have within that space.

### **What is a Cloud Foundry Space?**

Cloud Foundry describes a space as a shared location for application development, deployment, and maintenance. Each space role applies only to a particular space.

Each application and service is scoped to a space. Spaces are often defined by logical environment, such as development, testing, staging, or production.

### **What is a Cloud Foundry System Buildpack?**

Cloud Foundry includes system buildpacks that provide framework and runtime support for your applications. For a complete list of Cloud Foundry buildpacks, see <https://docs.cloudfoundry.org/buildpacks/>.

## **Predix Application Development Best Practices**

Follow these guidelines when designing applications to run on Cloud Foundry.

- Follow the twelve-factor app methodology when designing your application. See <http://12factor.net/>.
- Applications running on Cloud Foundry should not write files to the local file system because local file system storage is short-lived. In addition, instances of the same application do not share a local file system.
- Be aware of port limitations. For example, HTTP requests arrive on ports 80 and 443, and Cloud Foundry requires a channel for TCP/WebSocket traffic (port 4443 is assigned by default).
- When deploying your application to Cloud Foundry, ignore unnecessary files that could slow the deployment.
- Run multiple instances of your application to keep it available while undergoing Cloud Foundry upgrade processes.

See also <https://docs.cloudfoundry.org/devguide/deploy-apps/prepare-to-deploy.html>.

### **Additional Information**

- [Learning Predix Guide](#)
- [Predix CLI Guide](#)
- [Hello World Guide](#)