Executive Summary

EdgeX Foundry™ is a vendor-neutral open source project hosted by The Linux Foundation. EdgeX Foundry builds a common open framework for IoT edge computing. At the heart of the project is an interoperability framework hosted within a full hardware- and OS-agnostic reference software platform to enable an ecosystem of plug-and-play components that unifies the marketplace and accelerates the deployment of IoT solutions.

EdgeX is an important enabler for interested parties to freely collaborate on open and interoperable IoT solutions built using existing connectivity standards combined with their own proprietary innovations.

EdgeX Foundry goals include:

- Build and promote EdgeX as the common open platform unifying Internet of Things (IoT) edge computing
- Enable and encourage the rapidly growing community of IoT solutions providers to create an ecosystem of interoperable plug-and-play components around the EdgeX platform architecture
- Certify EdgeX components to ensure interoperability and compatibility
- Provide tools to quickly create EdgeX-based IoT edge solutions that can easily adapt to changing business needs
- Collaborate with relevant open source projects, standards groups, and industry alliances to ensure consistency and interoperability across the IoT

Where does EdgeX Foundry sit alongside the numerous other IoT initiatives?

EdgeX Foundry is focused on the Industrial IoT Edge. Like Cloud Foundry it leverages cloud-native principles (e.g. loosely-coupled microservices, platform-independence) but is architected to meet specific needs of the IoT edge including accommodating both IP- and non-IP based connectivity protocols, security and system management for widely distributed compute nodes, and scaling down to highly-constrained devices.

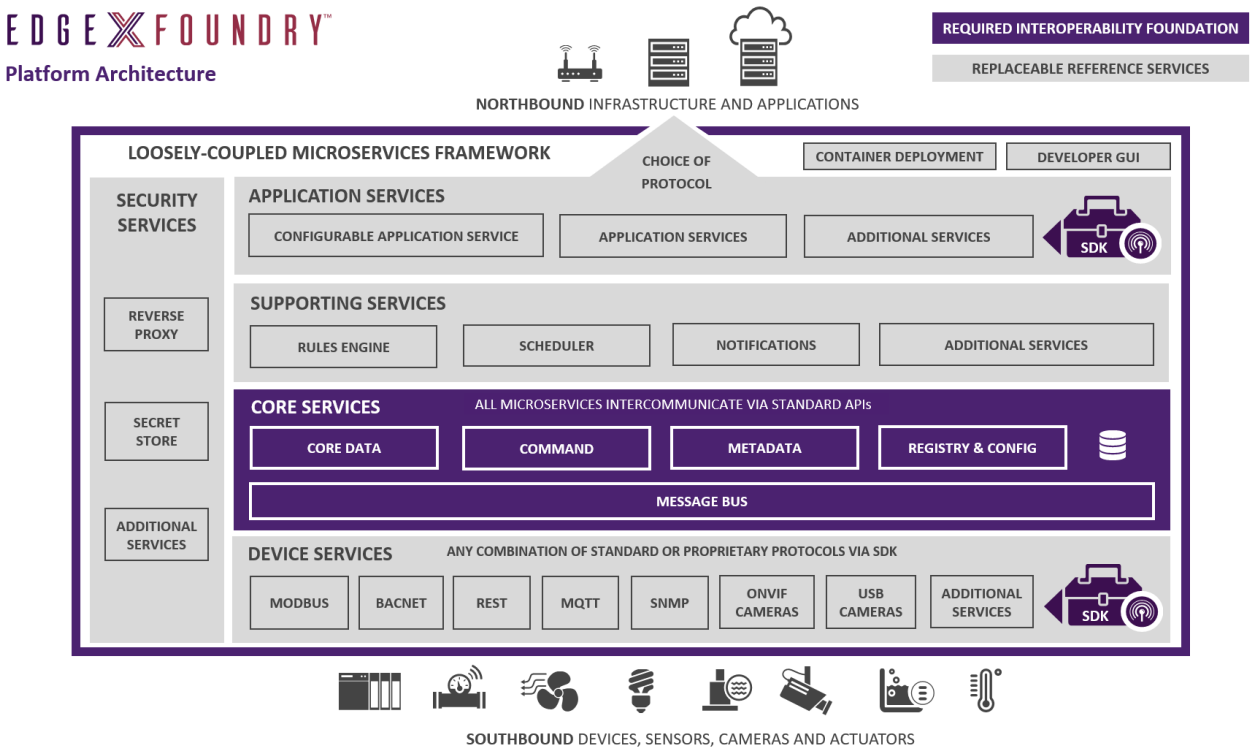
- The project's sweet spot is edge nodes such as embedded PCs, gateways, routers, and on-premises servers to address key interoperability challenges where "south meets north, east, and west" in a distributed IoT edge architecture
- The loosely-coupled platform as shown below can run entirely on one edge node or be distributed across multiple nodes
- Device Services can also run independently on smart sensors and communicate directly with Core Services in a tier above

EdgeX Foundry will benefit industry-specific interoperability efforts and strives to be a unifying force, creating an ecosystem of ecosystems, providing maximum flexibility to unify heterogeneous ingredients.

A key tenet of the EdgeX Foundry Project is to maintain platform independence for maximum scale:

- Any Silicon (for example, x86 or ARM)
- Any Operating System (for example, Linux, Windows, Mac OS)
- Any App Environment (allowing micro services written in Java, Javascript, Python, Go, C/C++, etc. to work together through the common APIs)

Loosely-Coupled Micro service Platform Architecture



EdgeX Foundry proposes a loosely-coupled tiered IoT architecture by allowing customers to deploy a mix of plug–and–play micro services on compute nodes at the edge depending on the capability of the host devices, where they sit in the solution stack, and the use case. Given six releases in the first three years of the community project, EdgeX is a fully-functional platform that will continue to mature and add functionality. As an open source, community-driven project, the current architecture scheme will evolve over time.

The architecture supports communications “north, south, east and west” as needed in the IoT “fog” and can be deployed on a variety of edge nodes in a tiered computing architecture. The deployment of combinations of different plug-and-play micro services simply depends on the use cases and capability of the host device.