

# SODA Projects



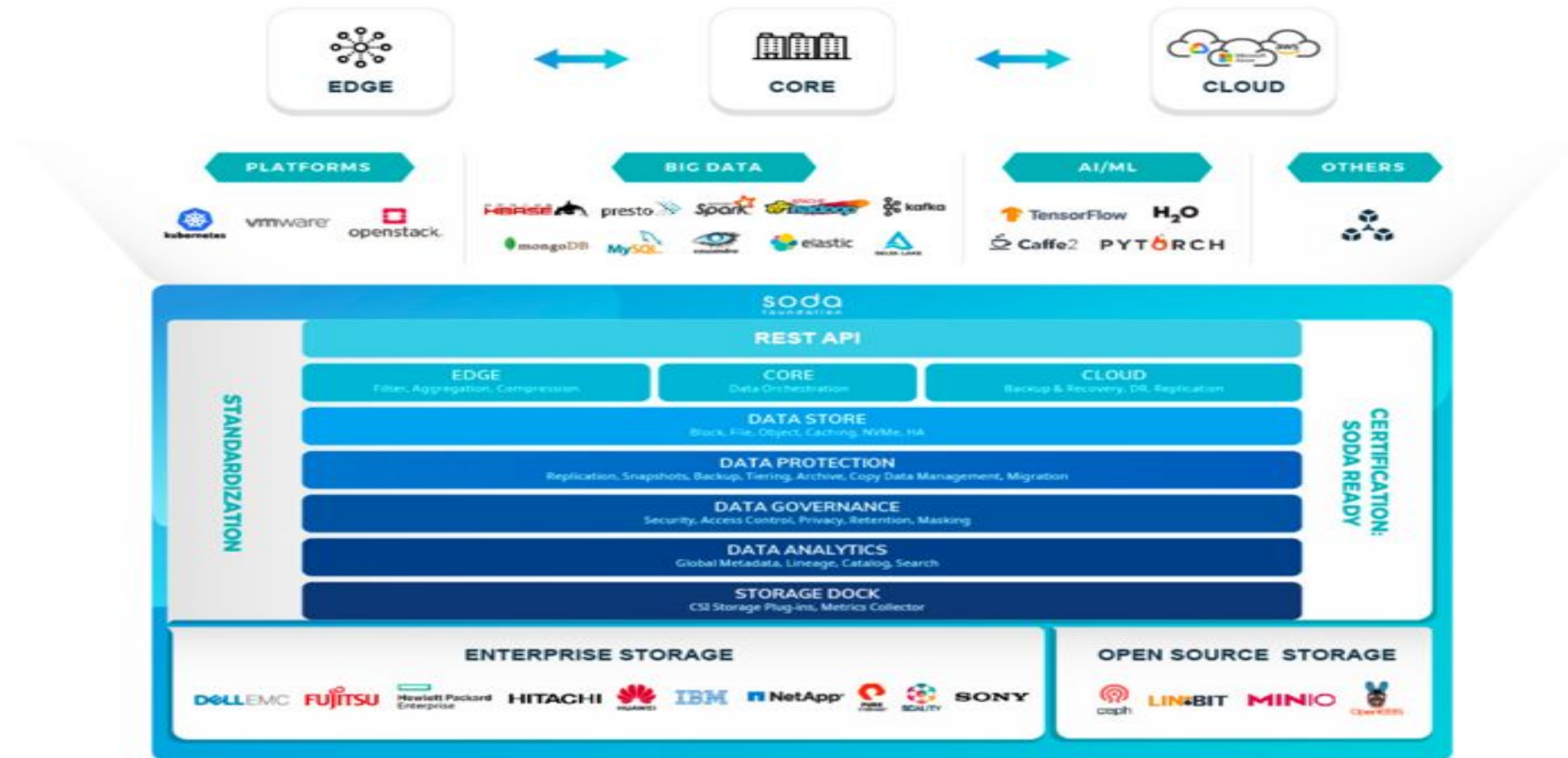
## ONE DATA FRAMEWORK, INFINITE POSSIBILITIES

an open source data framework enabling data mobility, data protection, data security, data lifecycle, and more

TSC, Architecture WG  
SODA Foundation

# The SODA Framework

SODA is an open source unified autonomous data framework for data mobility from edge to core to cloud.



SODA : SODA Open Data Autonomy

# Focus Areas

## DATA MOBILITY

SODA enables seamless data tiering, replication, migration, and archiving to the cloud using a common S3 interface with multi-cloud support for AWS, Azure, Google Cloud, IBM Cloud, and other local S3 object storage such as Ceph

## DATA PROTECTION

SODA uses snapshots to provide efficient data protection and instant recovery. Using data protection policies, snapshots can be programmed to be taken at intervals, and can be replicated to different storage, or to the cloud for disaster recovery

## DATA LIFECYCLE

SODA combines different storage resources on-premise, and across multiple clouds to build tiers. Using data lifecycle policies, data that meets the lifecycle conditions is moved to the next tier, allowing data to be stored efficiently throughout their lifecycle

## UNIFIED STORAGE PLATFORM

SODA abstracts multi-vendor storage and offers block, file and object storage services, monitoring, and more that work natively with Kubernetes, VMWare, and OpenStack. SODA can be easily extended to support other application frameworks.

## CLOUD NATIVE STORAGE

SODA provides persistent storage to Kubernetes stateful workloads with the SODA CSI driver. SODA consolidates multi-vendor storage backends into storage pools for dynamic provisioning. We are working on allowing cloud native storage to be plugged into SODA with their CSI drivers so , reducing complex multi-driver management

## DATA GOVERNANCE

SODA is working to offer a common data governance framework from edge to core to cloud to meet the needs for data regulations. This framework will provide, access control, data security, data retention, key management, etc. for data at rest and data in flight. We are looking for data governance and security experts to join us in this effort.

## DATA ORCHESTRATION

SODA is working to support data orchestration for IoT, big data, machine learning and other popular application frameworks, across different backend storage, and multiple clouds with a distributed data store. We welcome developers who are interested In working on this project.

## DATA ENERGY

Data energy is a new area of focus which tries to profile, analyze and optimize the energy consumption for data management. We envision data energy to be a key ROI and a competitive parameter for data solutions. SODA community has identified this for standardization to bring about energy efficient data solutions.



# The SODA Projects (planning)

SODA Projects are a mix of Core, Native and Eco Projects that are serviced by the SODA Incubator program.

## ECO PROJECTS

Eco Projects form the larger SODA ecosystem. They are either independent open source projects or part of other open source foundations, and are supported by the projects independent of SODA. Eco Projects integrations with other SODA projects are supported by the SODA community, and are up streamed where possible.

Member Projects  
(to be incubated)



Potential Projects



## NATIVE PROJECTS

Native Projects are projects donated to SODA Foundation and are either initiated by SODA members or 3<sup>rd</sup>-party organizations. Native Projects are supported by the SODA Foundation but are governed independently. They either follow the SODA release roadmap or have their own release roadmap.

Member Projects  
(incubated)



Member Projects  
(to be incubated)



Potential Projects



## CORE PROJECTS

Core Projects are initiated by the SODA community. They form the core SODA framework, and follow the SODA release roadmap. Core Projects are governed by the TSC.



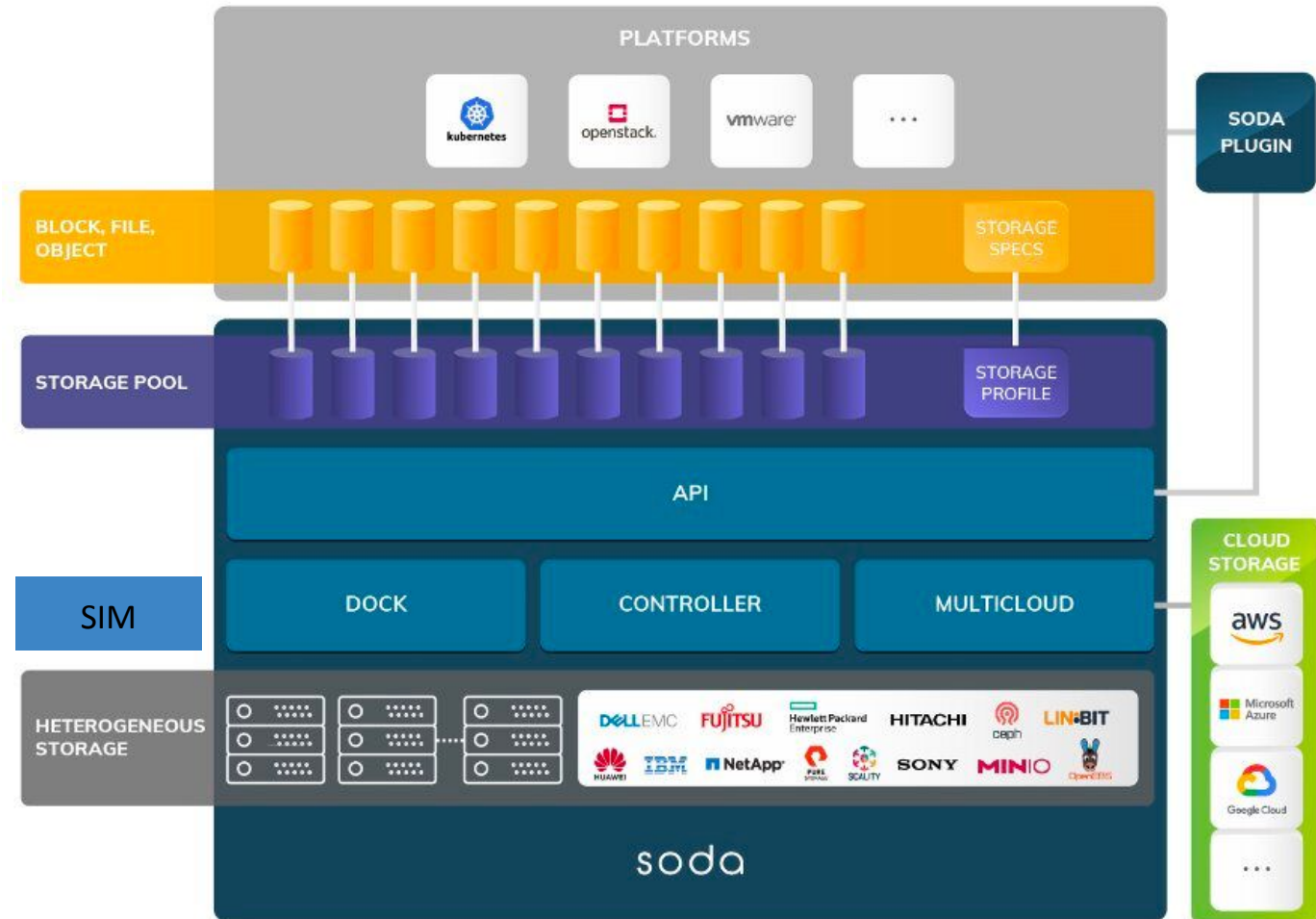


# SODA Data Framework: Architecture

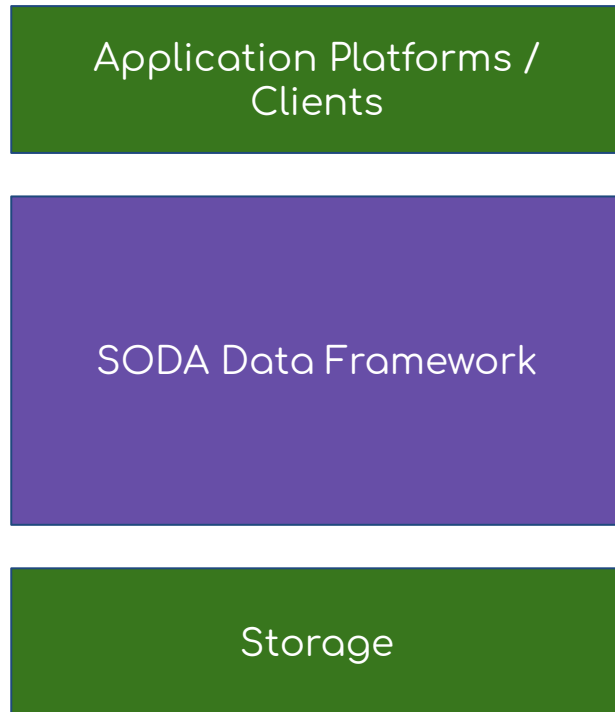
SODA Core Projects - API, Dock, Controller, Multicloud, Pluings, and SODA Infrastructure Manager, form the core of SODA framework architecture.

## Key Features:

- Policy-based storage provisioning with profiles
- Dynamic Kubernetes persistent storage with SODA CSI driver
- Integration with VMware and OpenStack
- S3 multicloud data control for AWS, Azure, Google Cloud and local Ceph S3 gateway
- Heterogeneous vendor storage support including OpenStack Cinder/Manila, and CSI drivers support in future
- Telemetry, automation, anomaly detection, and more



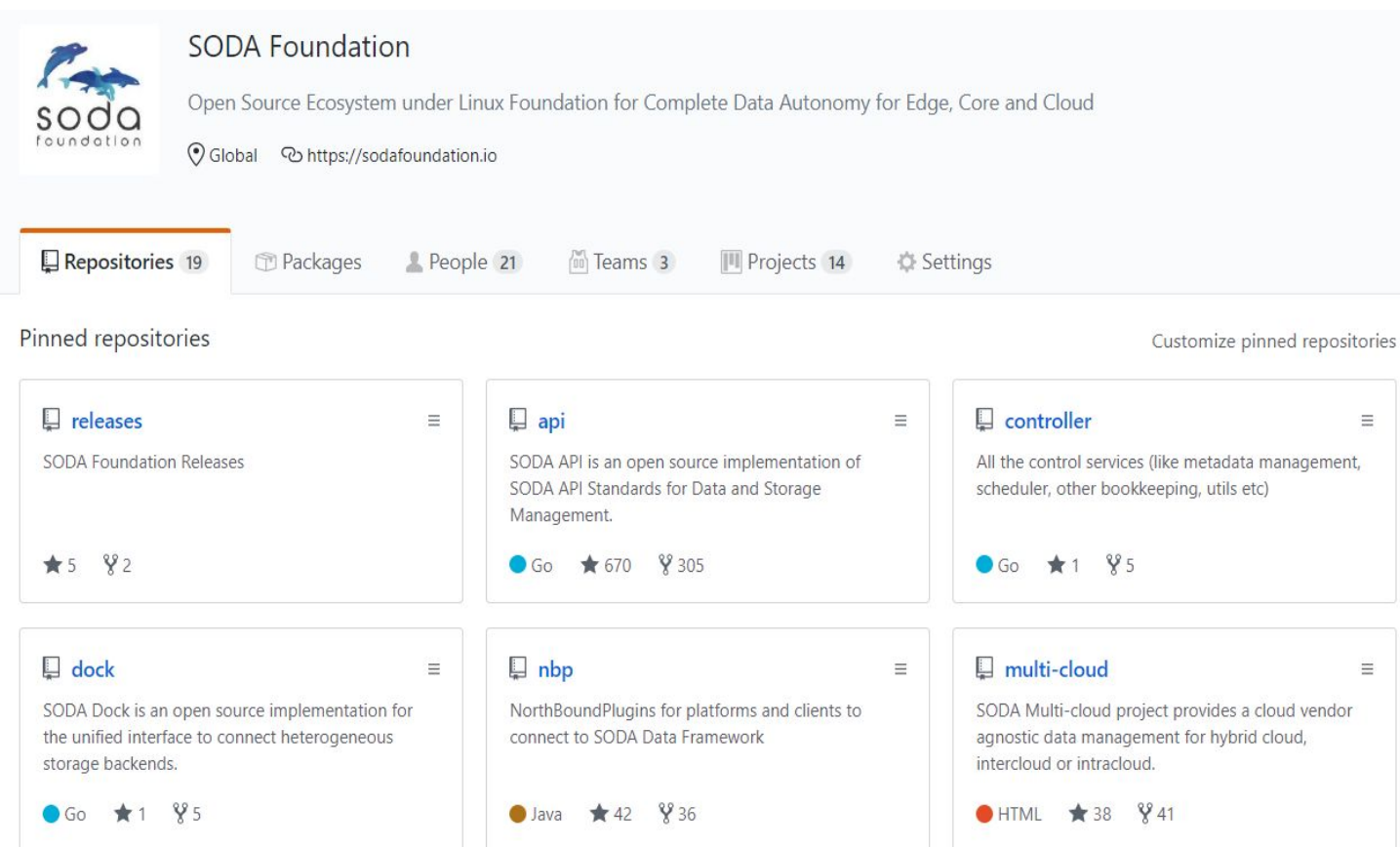
# SODA Data Framework : A Simple View



- Connects **Any Application Platforms or Clients** (Kubernetes, OpenStack, VMware...or any clients like Dashboard...) to **Any Storage** Backends(on-prem / cloud)
  - **Unified Data Framework (Control Plane and Data Plane)** supporting all Data Services
  - Support **Edge, Core and Cloud**
- 
- Multiple Projects for different features and areas form the complete SODA Framework

# SODA Projects : Where do you find?!

github.com/sodafoundation



The screenshot shows the GitHub profile for the SODA Foundation. The header includes the SODA Foundation logo, the name 'SODA Foundation', and the description 'Open Source Ecosystem under Linux Foundation for Complete Data Autonomy for Edge, Core and Cloud'. Below this is a navigation bar with links to Repositories (19), Packages, People (21), Teams (3), Projects (14), and Settings. The main section is titled 'Pinned repositories' and displays six repository cards. Each card shows the repository name, a brief description, the programming language, star count, and fork count.

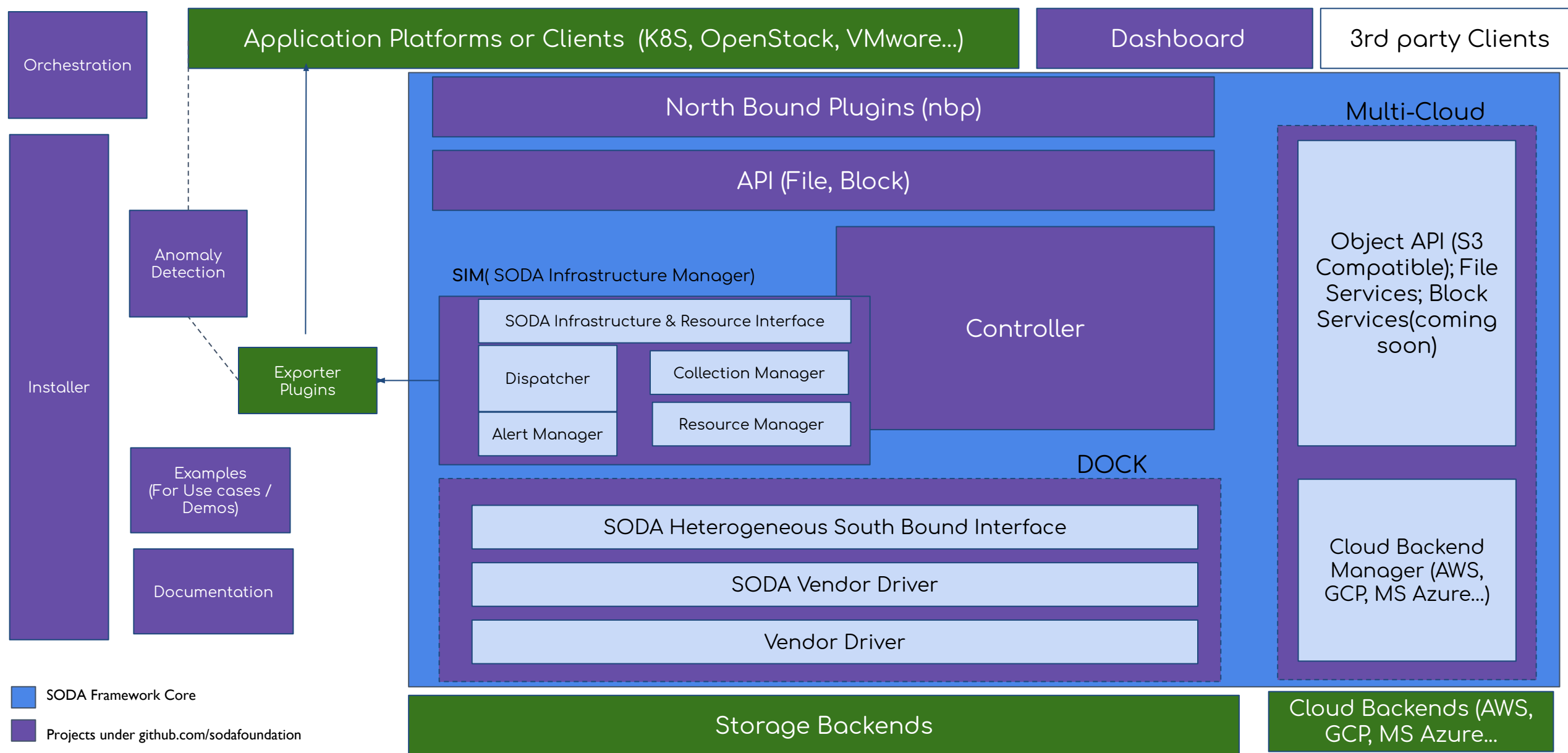
Repository	Description	Language	Stars	Forks
releases	SODA Foundation Releases	-	5	2
api	SODA API is an open source implementation of SODA API Standards for Data and Storage Management.	Go	670	305
controller	All the control services (like metadata management, scheduler, other bookkeeping, utils etc)	Go	1	5
dock	SODA Dock is an open source implementation for the unified interface to connect heterogeneous storage backends.	Go	1	5
nbp	NorthBoundPlugins for platforms and clients to connect to SODA Data Framework	Java	42	36
multi-cloud	SODA Multi-cloud project provides a cloud vendor agnostic data management for hybrid cloud, intercloud or intracloud.	HTML	38	41

## SODA Projects : *You can contribute to!!*

1. **API**
2. **Controller**
3. **Dock**
4. **NBP**
5. **Multi-Cloud**
6. **SIM (SODA Infrastructure Manager)**
7. **Orchestration**
8. **Anomaly Detection**
9. **Installer**
10. **Dashboard**
11. **Documentation**
12. **Examples (Use cases / Demos)**
13. **.....more**



# SODA Projects Architecture





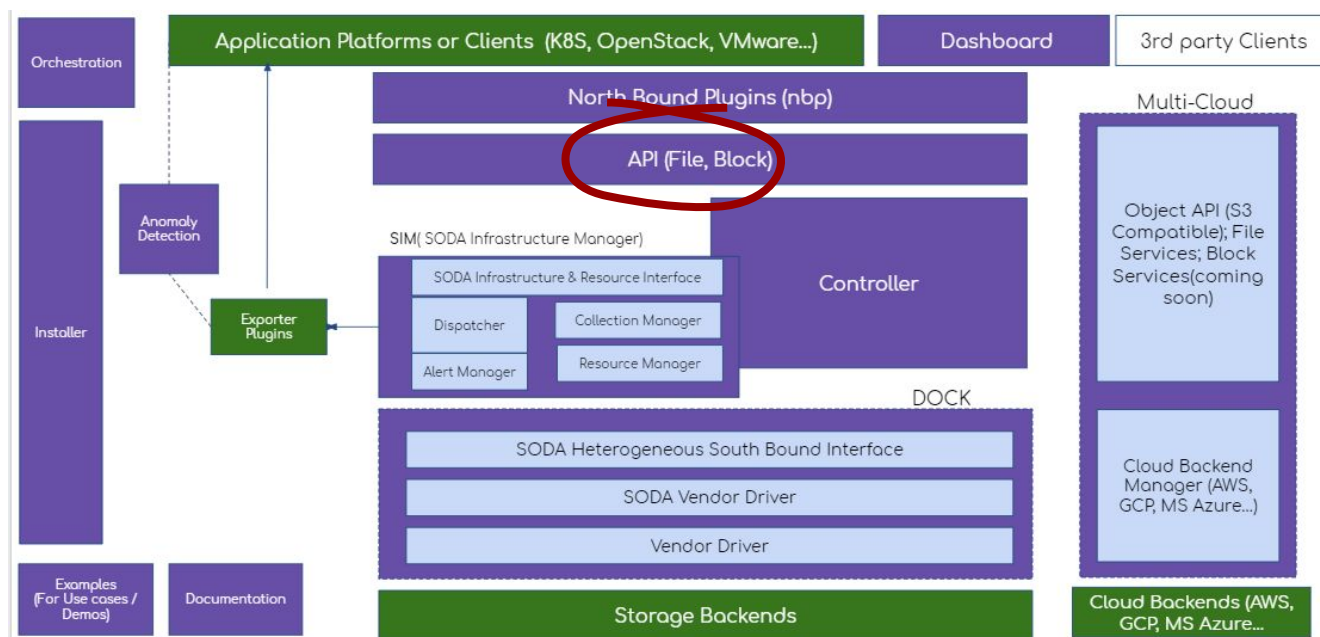
# Project Notes

1. **API, Controller, Dock, Infrastructure Manager, Multicloud and North Bound Plugin** Projects form the core part of the SODA Framework
2. There are other projects like **Orchestration, Anomaly Detection** which provides support to build, automate, analyse data solutions as a part of SODA Framework
3. Projects like **Installer** and **Dashboard** are developed to provide integrated solution reference using SODA Projects for the users.
4. **Examples** project provides specific use cases built using SODA projects.
5. **Documentation** project is the source for docs.sodafoundation.io. It is the integrated documentation for all the projects maintained under SODA Foundation github ([github.com/sodafoundation](https://github.com/sodafoundation))

# API

SODA API is an open source implementation of SODA API Standards for Data and Storage Management. The effort is to provide a common unified data and storage interface to store, run any data anywhere.

This project implements the API Server, Different API services, utilities and more. The implementation will be based on the API standards from The SODA Foundation. It connects the application or client to the storage backends to do data/storage management seamlessly providing a platform and storage agnostic framework.



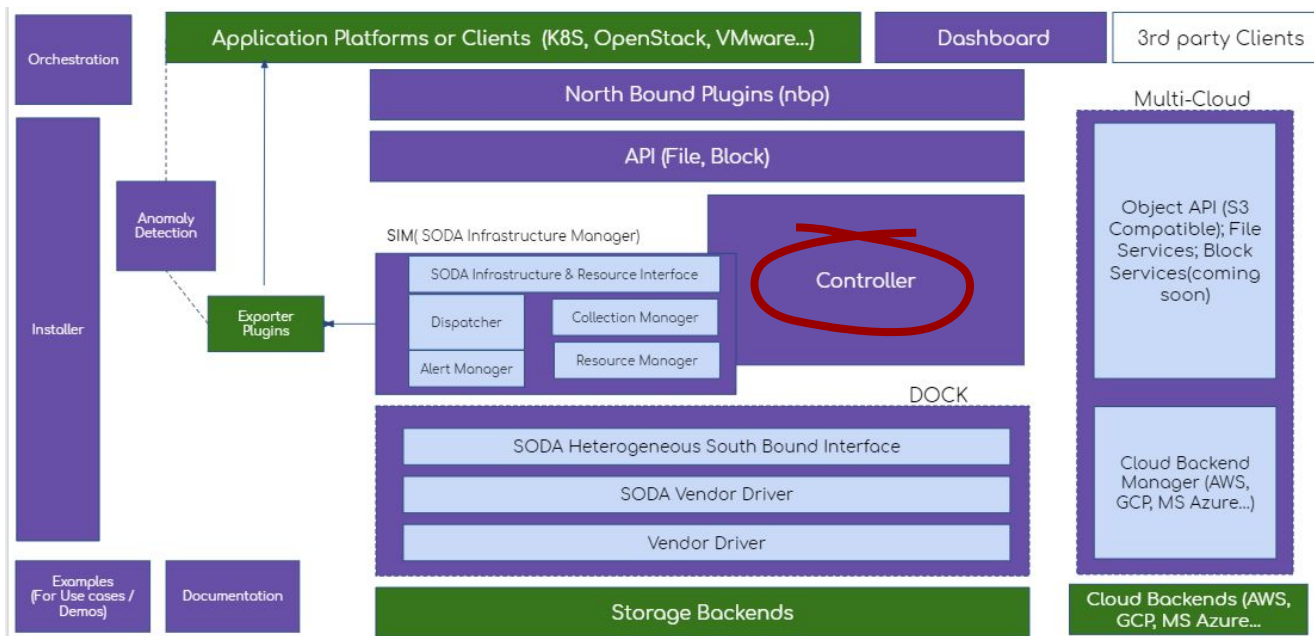
- Current:
  - on-prem Data Management
  - File & Block
- Going Forward:
  - Home for SODA API Standards
  - Unified APIs for Data Store and Operations (Telemetry etc)

([github.com/sodafoundation/api](https://github.com/sodafoundation/api))

# Controller

SODA Controller is an open source implementation for all the control services (like metadata management, scheduler, other bookkeeping, utils etc) . This is currently added a separate repository considering many core services could be developed under this for the overall data store framework.

In the API flow from SODA API to SODA DOCK, controller plays a critical role for all the API flow management and tracking to handle all the state machine and metadata management requirements. This will be a layer to keep addons to new services or facilities or utilities for the soda data platform



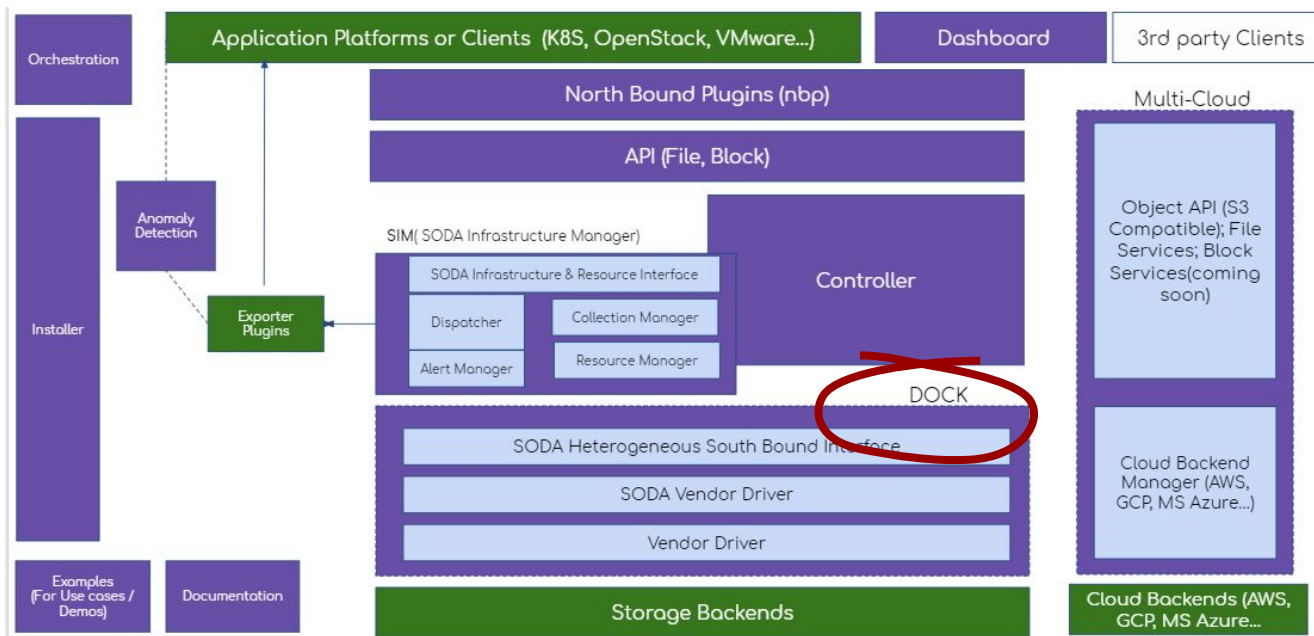
- Current:
  - on-prem Data Management
  - File & Block
- Going Forward:
  - Unified Control (metadata management, scheduling, and more) for the Data Store

([github.com/sodafoundation/controller](https://github.com/sodafoundation/controller))

# DOCK

SODA Dock is an open source implementation for the unified interface to connect heterogeneous storage backends. So dock is a docking station for heterogeneous storage backends! This is where all the different storage vendors drivers for various storage backend models get attached.

SODA supports OpenStack Cinder, and Manila storage drivers, Ceph and some of the storage vendors as well. . We are working looking to extending support for CSI drivers (as is) on the backend, which will simplify management and enable orchestration across heterogeneous storage for Kubernetes.



- Current:
  - on-prem Storage Backend Drivers for SODA
  - HP, Fujitsu, Huawei, NetApp, IBM, cinder, lvm, fileshare..
  - API - Controller - DOCK
- Going Forward:
  - Unified storage dock to connect all industry storages

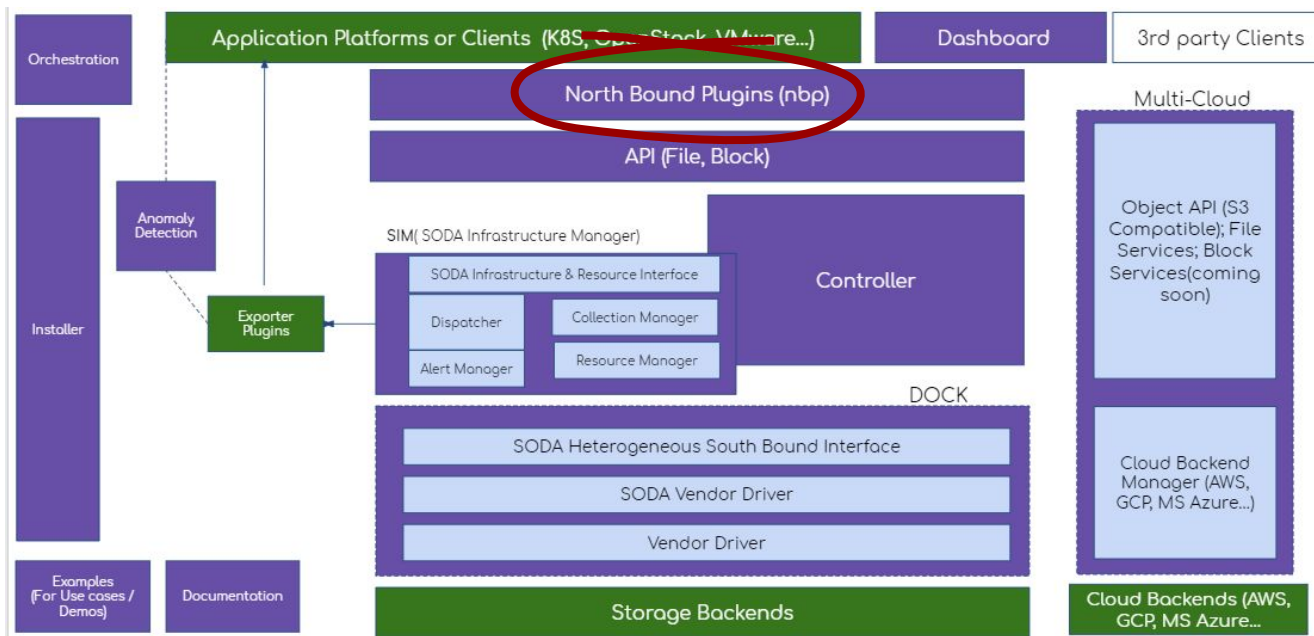
([github.com/sodafoundation/dock](https://github.com/sodafoundation/dock))



# North Bound Plugins

SODA nbp(North-Bound Plugin) Project focuses to extend all the industry platforms and application solutions to interface with SODA API or make the platform compliant with SODA API developing a plugin. So, with thin, easy to develop north-bound plugins, any platforms can be connected to SODA Platform.

We support multiple top industry platforms like Kubernetes, OpenStack and VMWare. More getting added over the releases based on the users/community demands.



- Current:
  - Connects Application API to SODA API
  - Kubernetes, OpenStack, VMWare
- Going Forward:
  - Support All industry application platforms
  - Thin or No plugins needed when platforms are SODA compliant

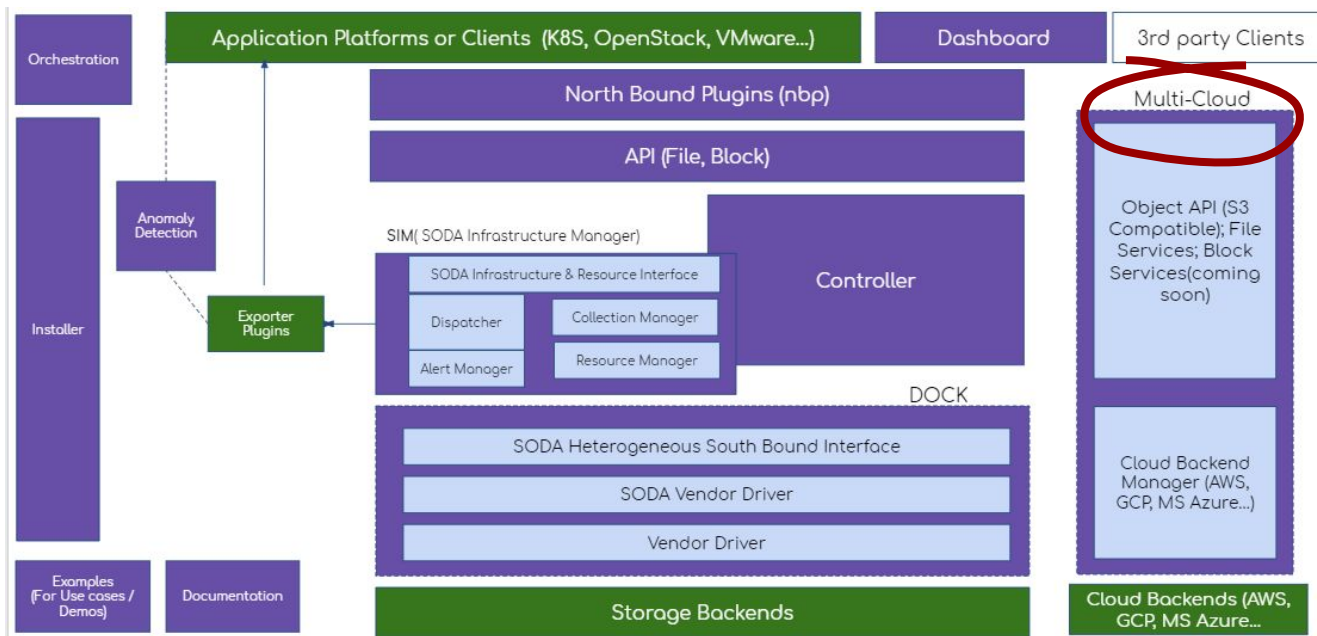
([github.com/sodafoundation/nbp](https://github.com/sodafoundation/nbp))



# Multicloud

SODA Multi-cloud project provides a cloud vendor agnostic data management for hybrid cloud, intercloud or intracloud. It provides a backend manager which is S3 compatible to connect with any cloud vendors. It supports various cloud backends like MS Azure, GCP, AWS, Huawei, IBM and more. It also supports Ceph backed to enable on-prem. We have also integrated some optimizations and also YIG-Ceph backend from China Unicom YIG project.

Currently it provides Object Storage and we are working to support file and block services from the cloud vendors.



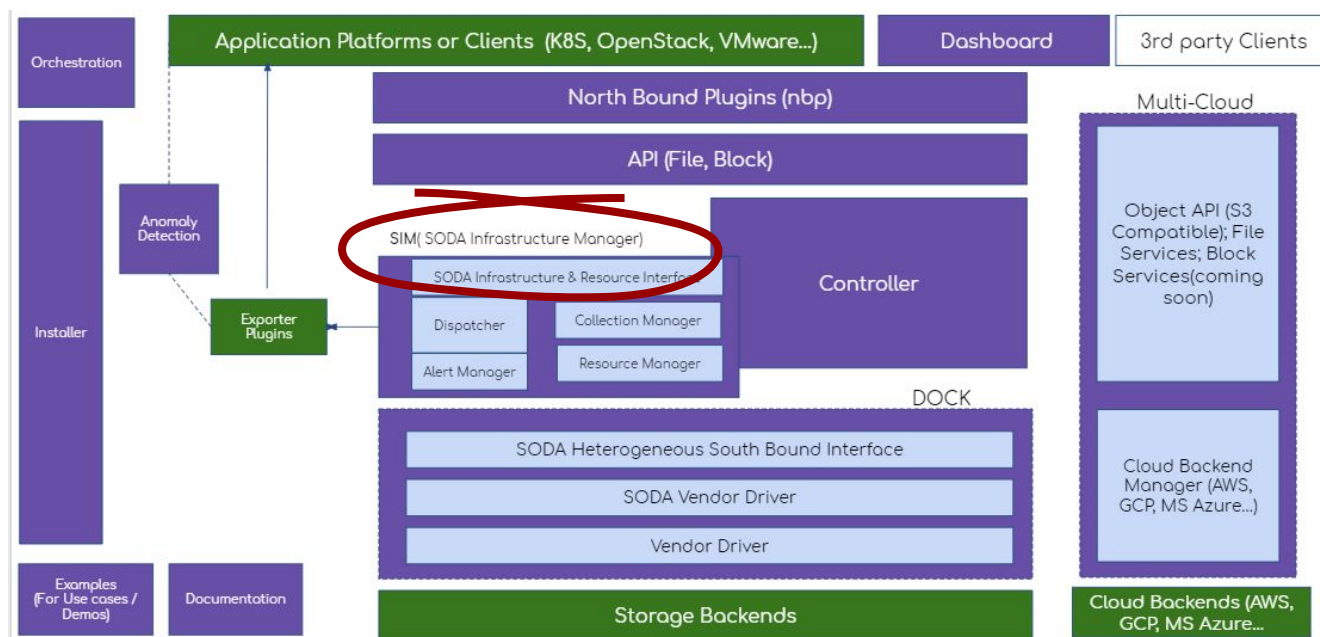
- Current:
  - AWS, MS Azure, GCP, AliBaba, IBM, Huawei, ceph(on prem)
  - Object APIs
- Going Forward:
  - Support All Cloud Backends
  - File and Block Services
  - Connects to SODA on-prem / edge

([github.com/sodafoundation/multi-cloud](https://github.com/sodafoundation/multi-cloud))

# SIM (SODA Infrastructure Manager)

SODA Infrastructure Manager(SIM) is an open source project to manage the infrastructure resources, alerts and monitoring for SODA platform. It will cover the resource management of all the storage backends & other infrastructures under SODA deployment. It will also provide the alert management and metric data(performance/health) for monitoring and further analysis. SIM will provide a scalable framework where more and more backends and also client exporters can be added.

It provides set of APIs to export and connect with clients as well as a set of interfaces for various driver addition. Extensible using exporters for clients/predictive engines



- Current:
  - Developing heterogeneous infrastructure management
  - on prem
- Going Forward:
  - Unified & Intelligent Resource, Alert and Performance Monitoring for SODA Framework

([github.com/sodafoundation/sim](https://github.com/sodafoundation/sim))

# SODA Other Projects

- Orchestration : Intelligent Workflow Automation  
([github.com/sodafoundation/orchestration](https://github.com/sodafoundation/orchestration))
- Anomaly Detection : Predictive Analysis for SIM/Telemetry Data  
([github.com/sodafoundation/anomaly-detection](https://github.com/sodafoundation/anomaly-detection))
- Installer : Easy installation of overall setup using all integrated projects in SODA Release  
([github.com/sodafoundation/installer](https://github.com/sodafoundation/installer))
- Dashboard: GUI Dashboard Reference to Showcase the SODA Release features  
([github.com/sodafoundation/installer](https://github.com/sodafoundation/installer))
- Documentation: Overall integrated SODA Documentation for all projects maintained by SODA Foundation.  
This is used to build [docs.sodafoundation.io](https://docs.sodafoundation.io)  
([github.com/sodafoundation/documentation](https://github.com/sodafoundation/documentation))
- Examples: Home for Use cases Demos and prototypes  
([github.com/sodafoundation/examples](https://github.com/sodafoundation/examples))

# Want to contribute....?!

- **Join slack [sodafoundation.io/slack](https://sodafoundation.io/slack)** and share your willingness to contribute  
(*We are watching ;)*
- Check **project issues** labels 'help needed' , **SMC (Start My Contribution)**
- Any project issues, simply comment that you want to support the issue
- Check **pull requests**
- Try out the **releases** and raise issues!
- Check **[docs.sodafoundation.io](https://docs.sodafoundation.io)** (Just migrated from opensds, chance to find issues - *secret ;)*
- Check **<http://bit.ly/sodaglobalcommunitymeeting>** & Join our community meeting
- Share **use cases / requirements**

We need your support!



# Thank You



<https://sodafoundation.io>



<https://github.com/sodafoundation>



<https://sodafoundation.io/slack>



[@sodafoundation](#)



<http://lists.sodafoundation.io/>