YARN:

The Resource Manager for Hadoop

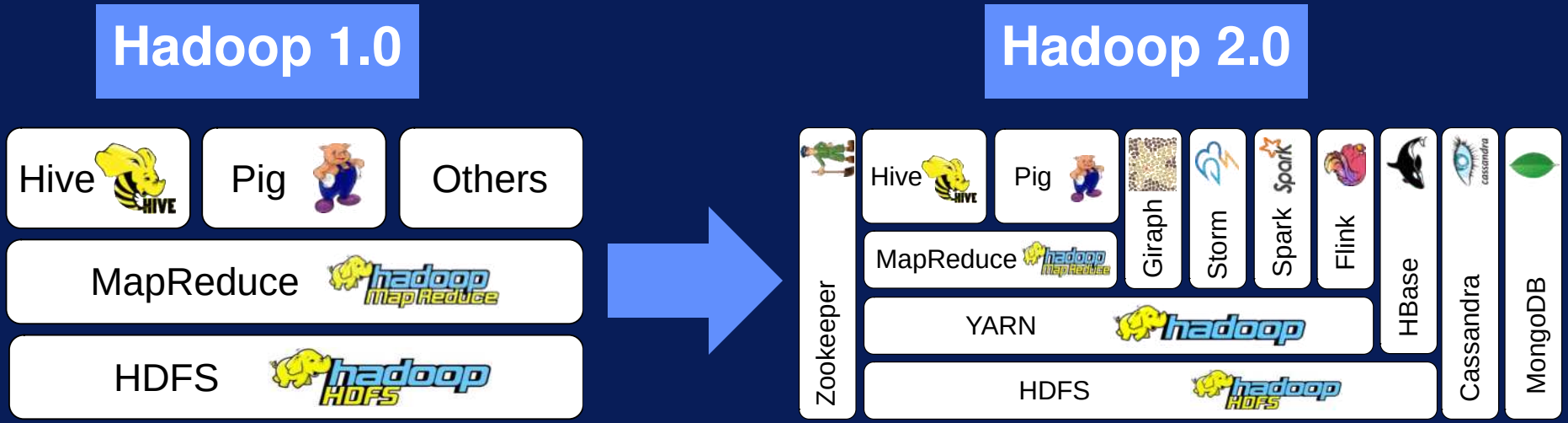
After this video you will be able to..

- Outline how YARN provides flexible resource management for Hadoop cluster
- Explain how YARN extends Hadoop to enable multiple frameworks such as MapReduce, Giraph, Spark and Flink

HDFS Cluster Utilization

Share Hadoop across applications

Hadoop evolved over time!



Hadoop 1.0

Only MapReduce jobs

Hive 

Pig 

Others

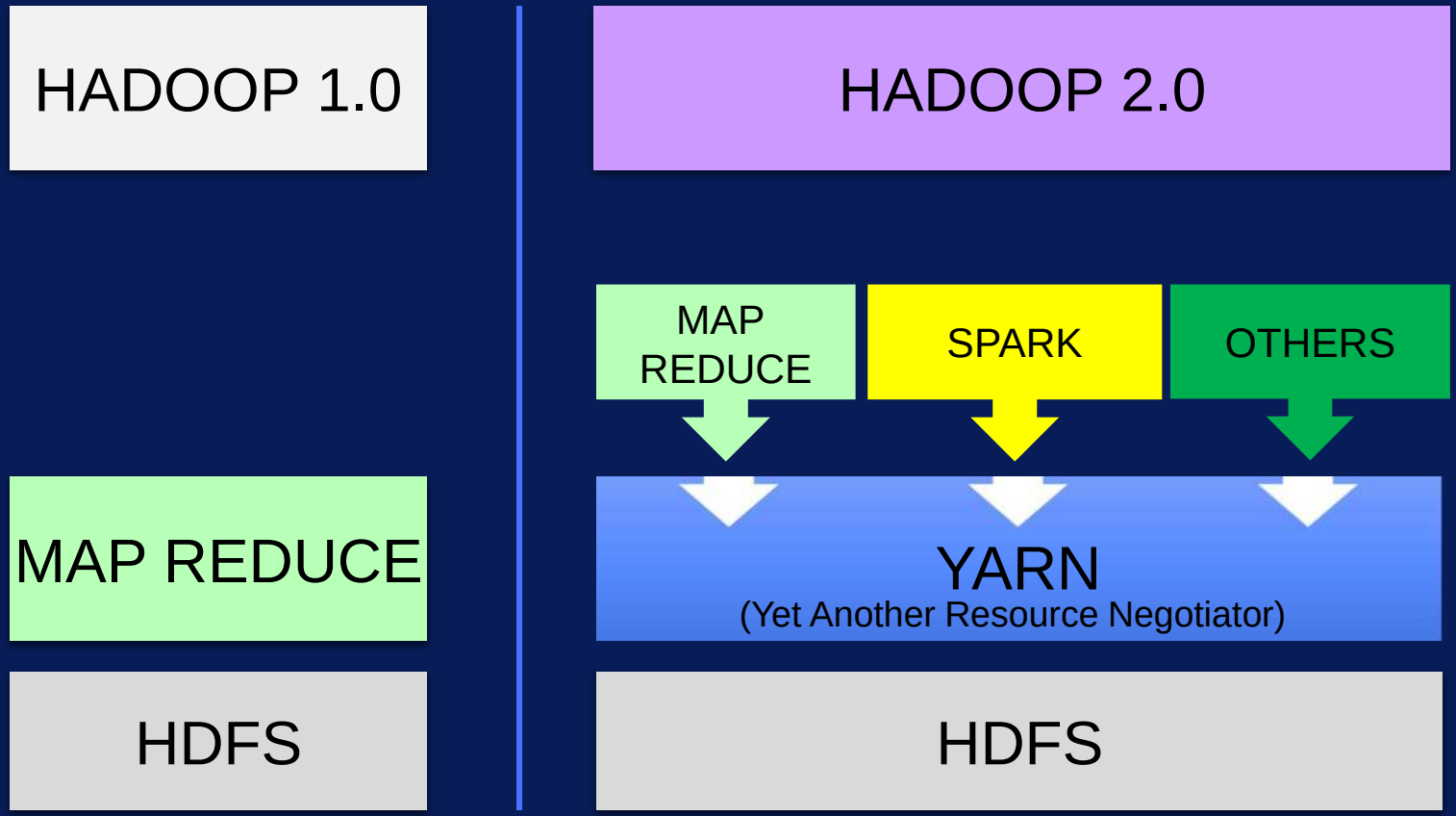
MapReduce 

HDFS 

Other applications not supported

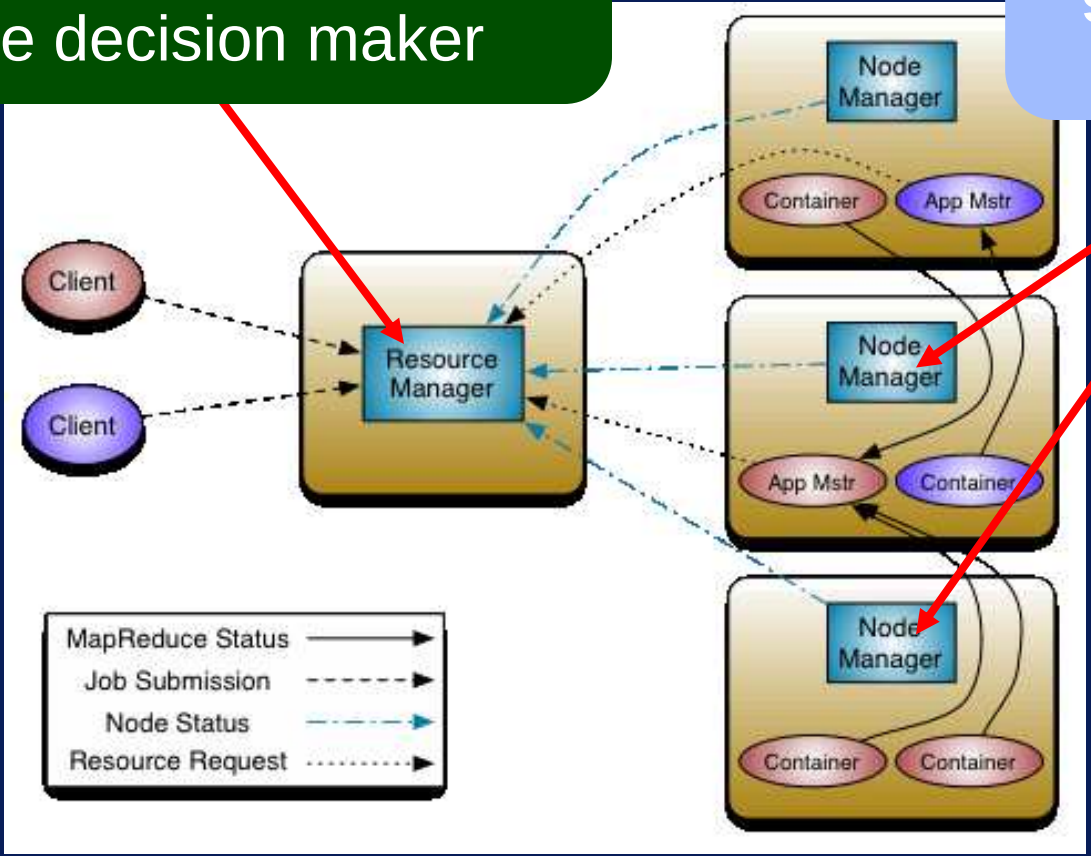
Poor Resource utilization

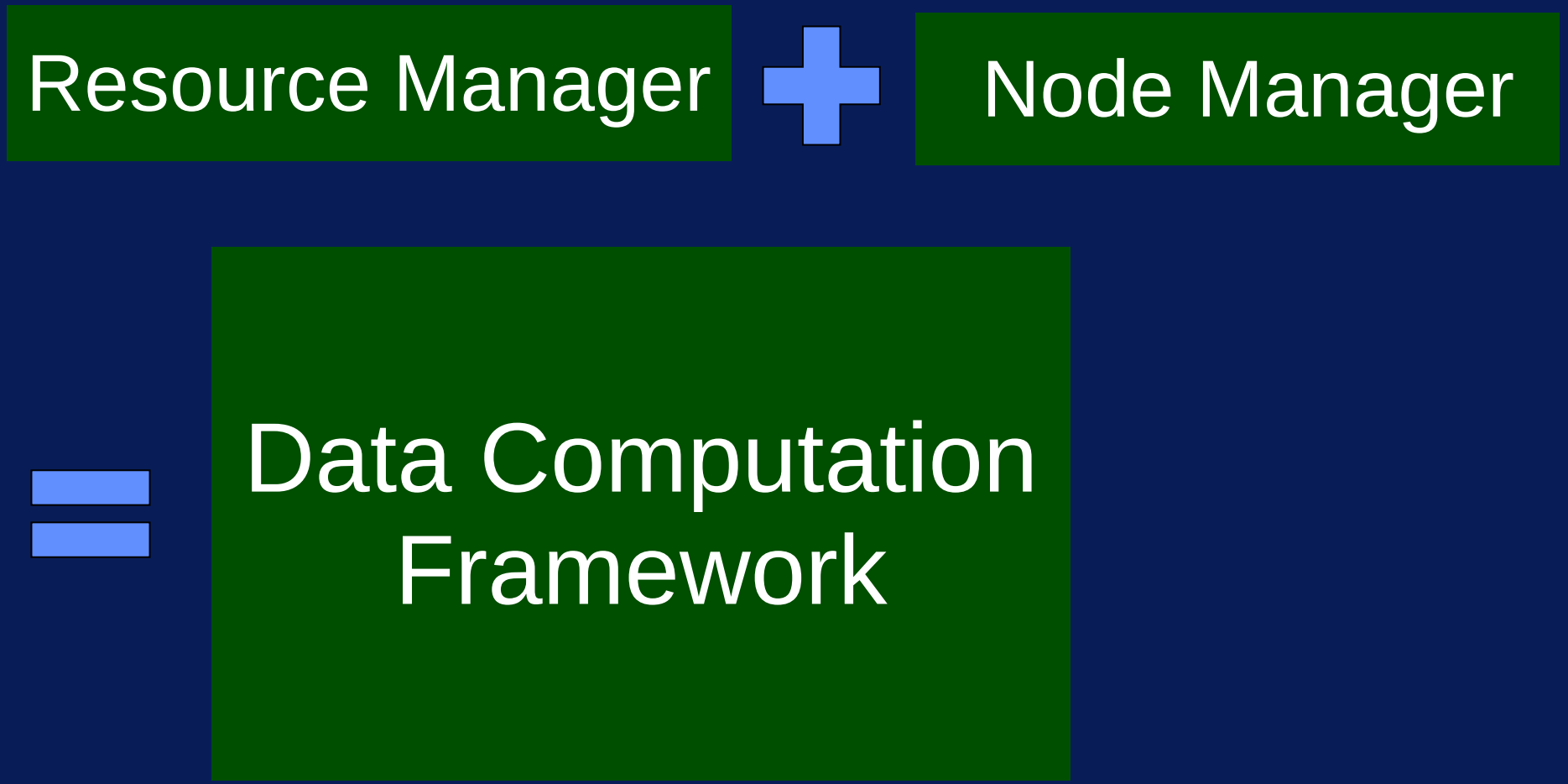
One dataset → many applications



Central Resource Manager
==
ultimate decision maker

Each machine gets a Node Manager




Resource Manager
Node Manager
Data Computation Framework

Application Master = personal negotiator

Negotiates

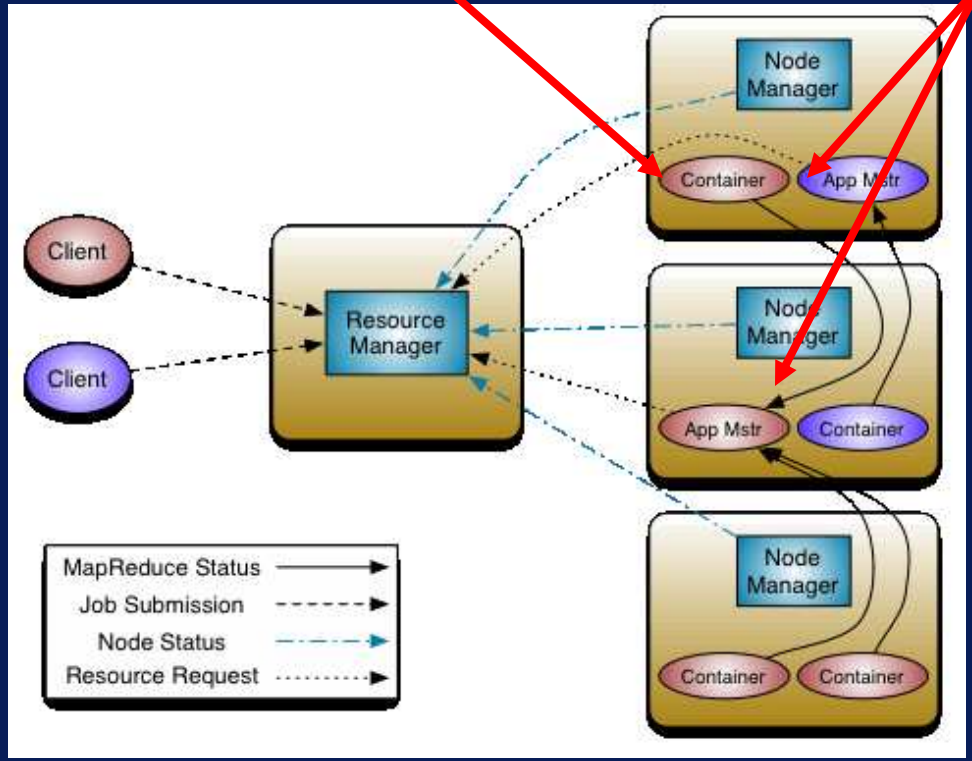
Resource Manager

Gets the job done

Node Manager

Container = a machine

Application Master = Personal Negotiator



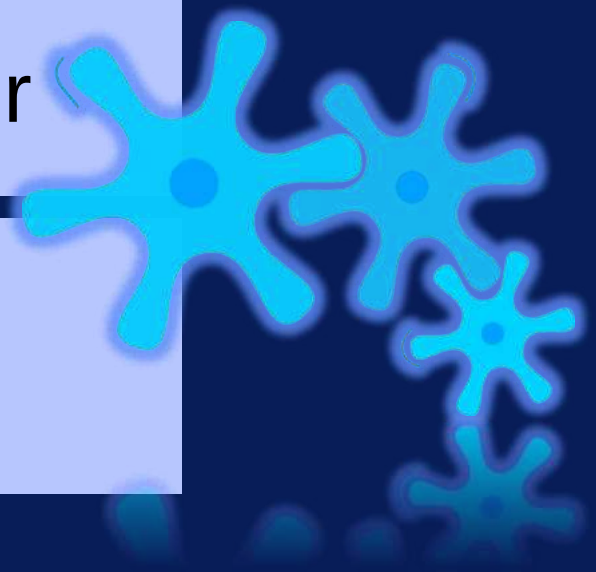
Essential gears in YARN engine

Resource Manager

Applications Master

Node Manager

Container



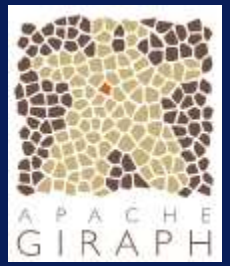
2X ↑ Jobs per day

2X ↑ CPU utilization

2.5X ↑ Number of tasks from all jobs

* Source: Apache Hadoop YARN: Yet Another Resource Negotiator.” In Proceedings of the 4th Annual Symposium on Cloud Computing, 5:1–5:16. SOCC ’13.

YARN → More Applications



and growing …

Data → Value

Many choices in Hadoop 2.0

One dataset → Many applications

Higher Resource Utilization → Lower Cost