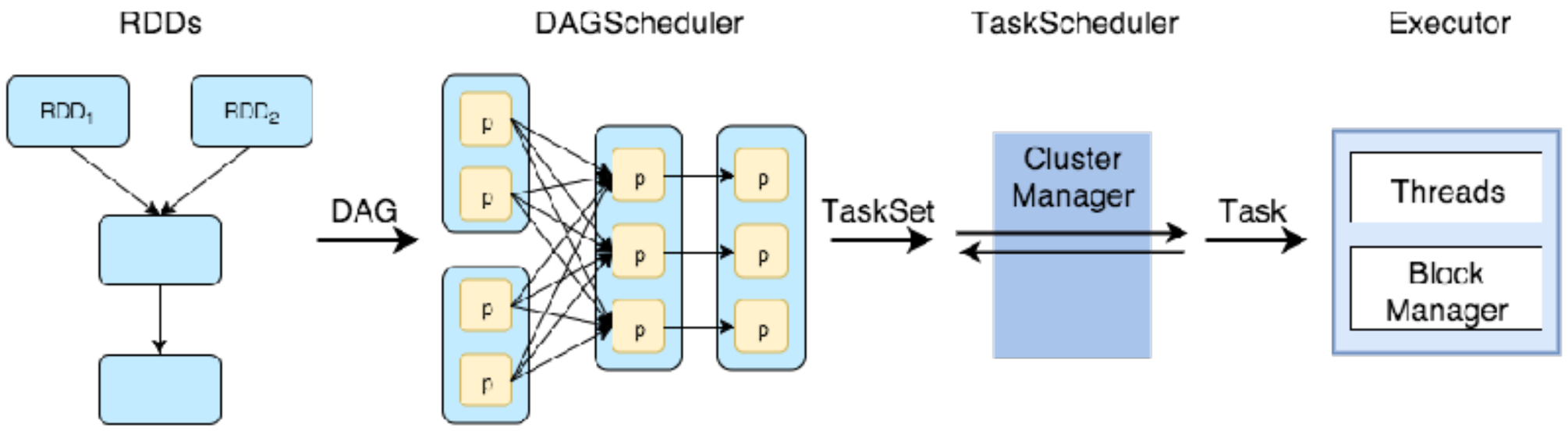
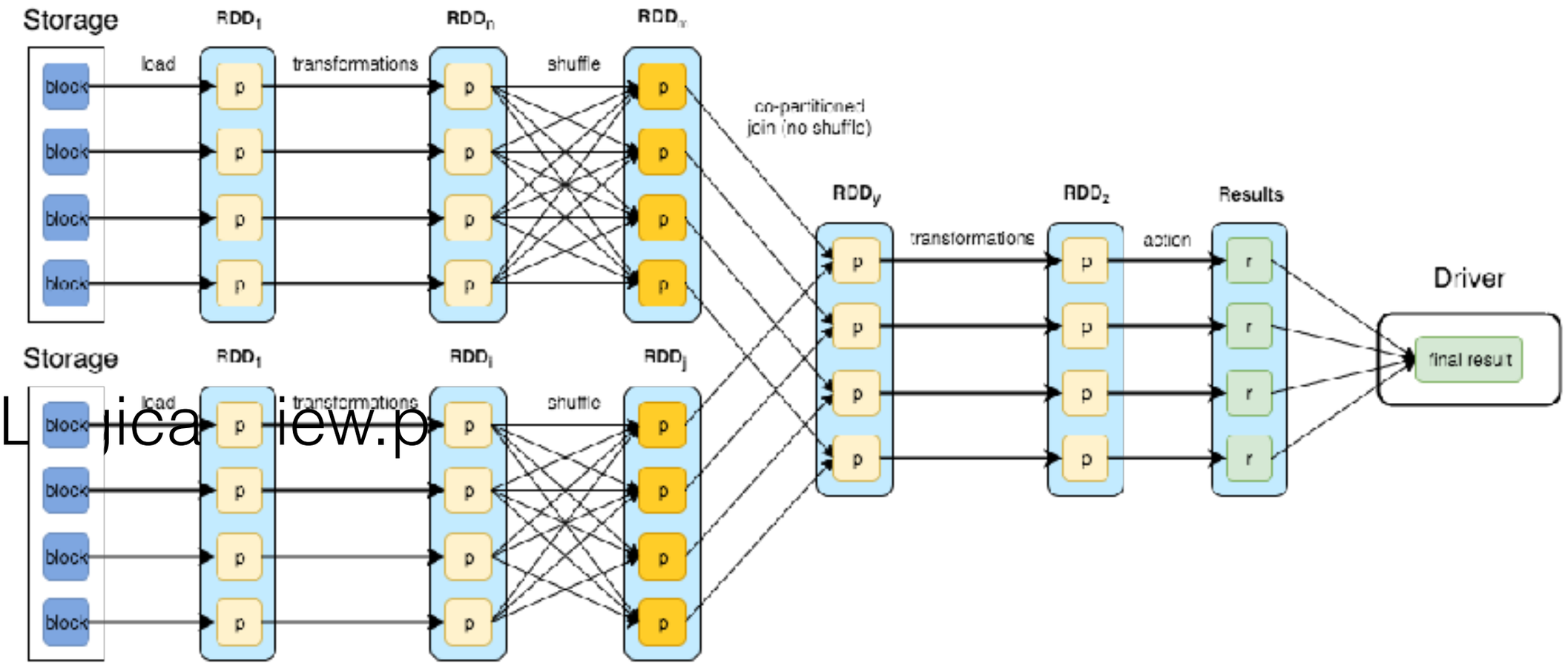
Apache Spark Internals

Ladle Patel

Job Flow

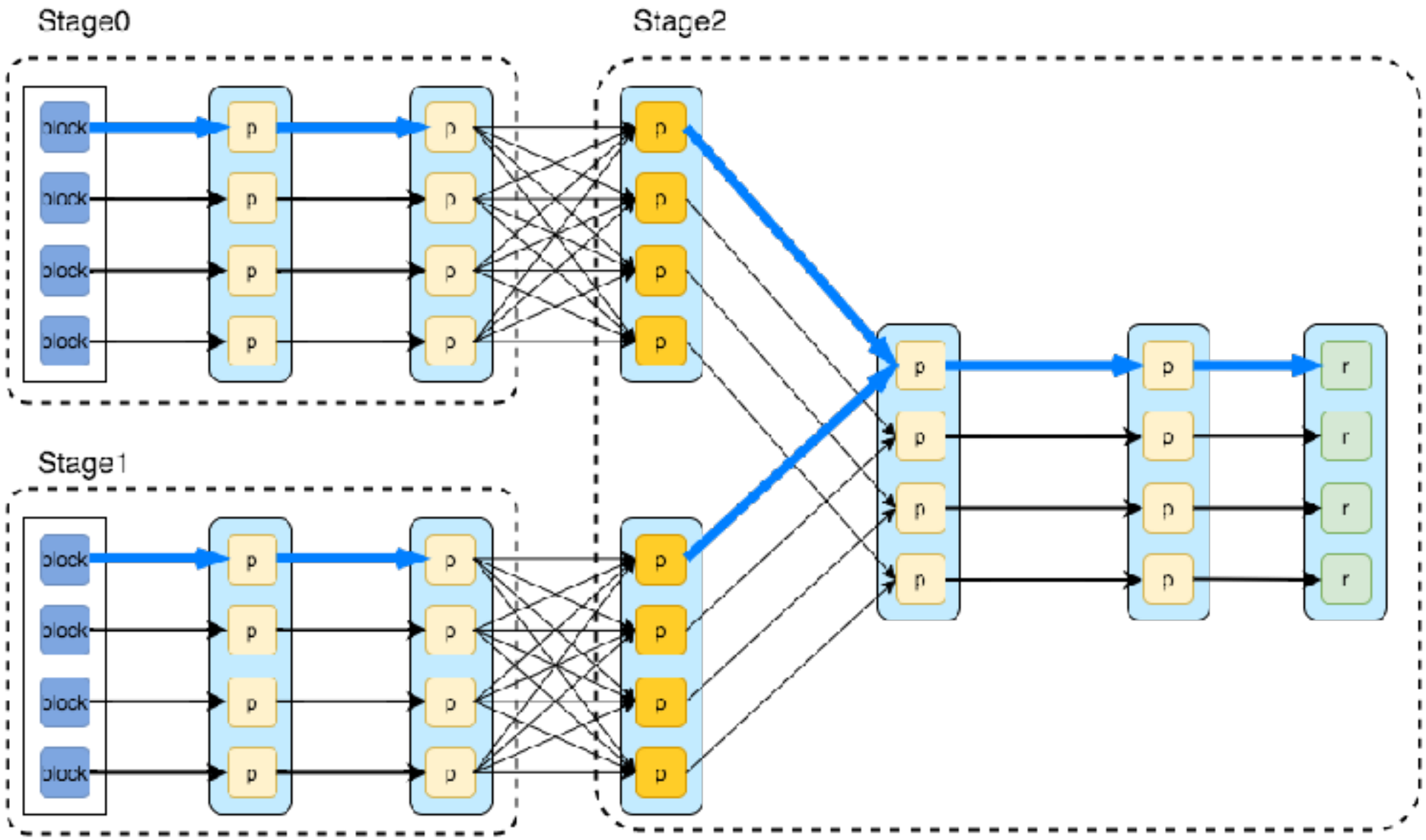

RDDs
DAGScheduler
TaskScheduler
Executor
RDD1
RDD2
DAG
p
TaskSet
Cluster
Manager
Task
Threads
Block
Manager

DAG(Logical plan)

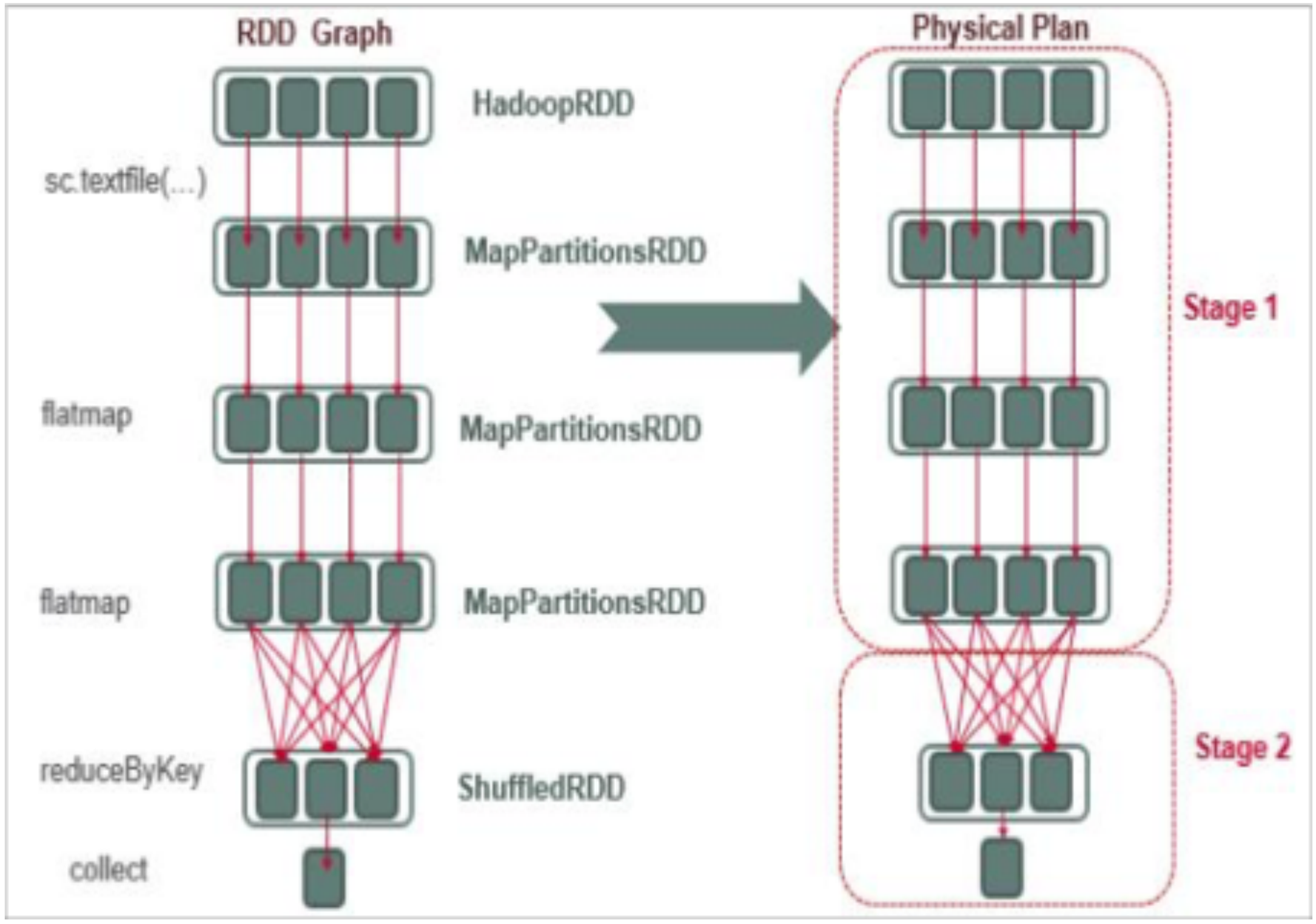


- Logical view.p

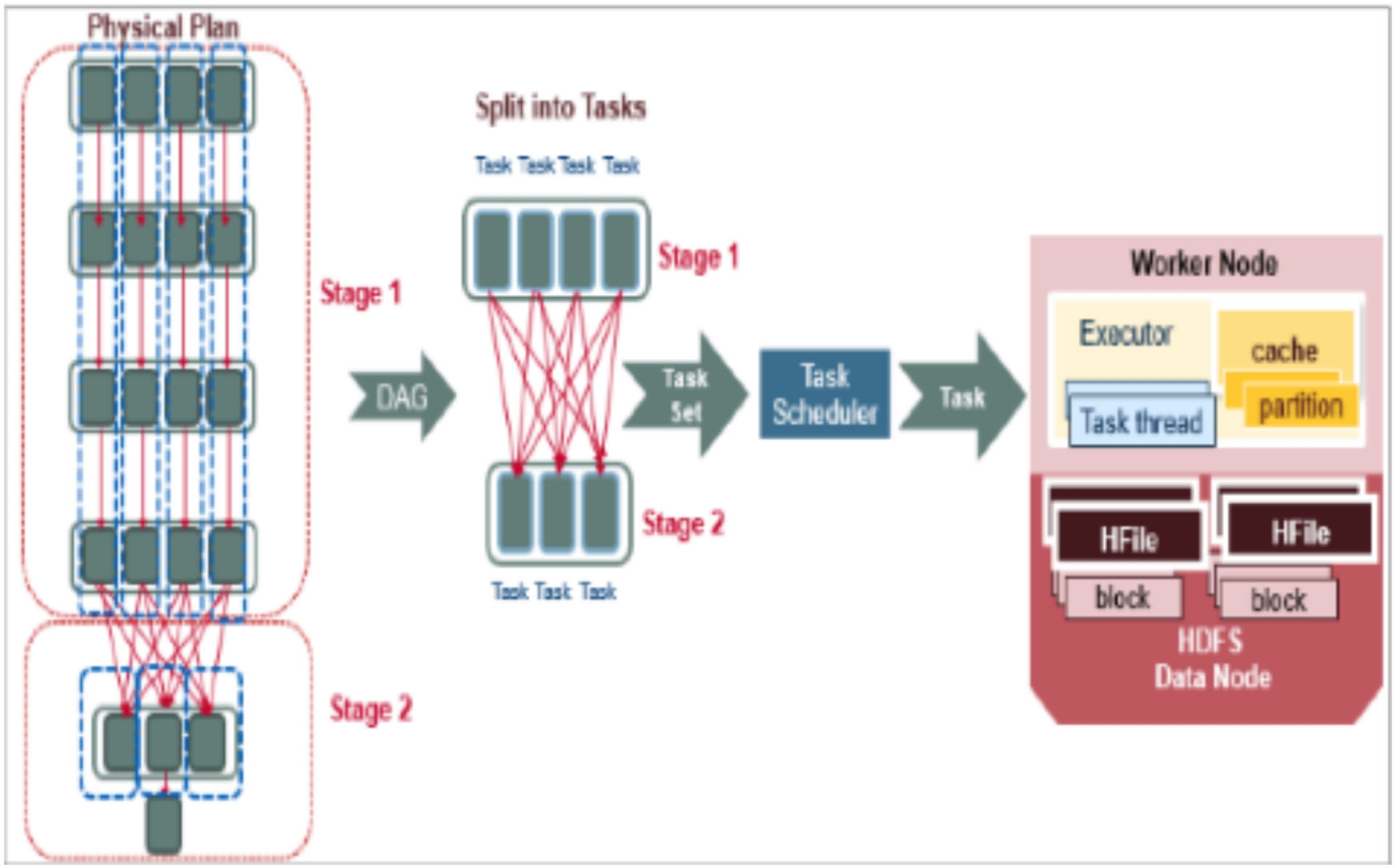
Splitting DAG into Stages (Physical plan)



Logical and Physical plan



Logical and Physical plan Cont..



Directed Acyclic Graph

- Graph :Structure consisting of nodes, that are connected to each other with edges.

- Directed :The connections between the nodes (edges) have a direction: A -> B is not the same as B -> A.

- Acyclic :Non-circular moving from node to node by following the edges, you will never encounter the same node for the second time.

Narrow and Wide Transformation

- Narrow transformation : Transformation which doesn't require the data to be shuffled across the partitions. for example, Map, filter etc..

- Wide transformation : Transformation which requires the data to be shuffled for example, reduceByKey etc..

Terminologies

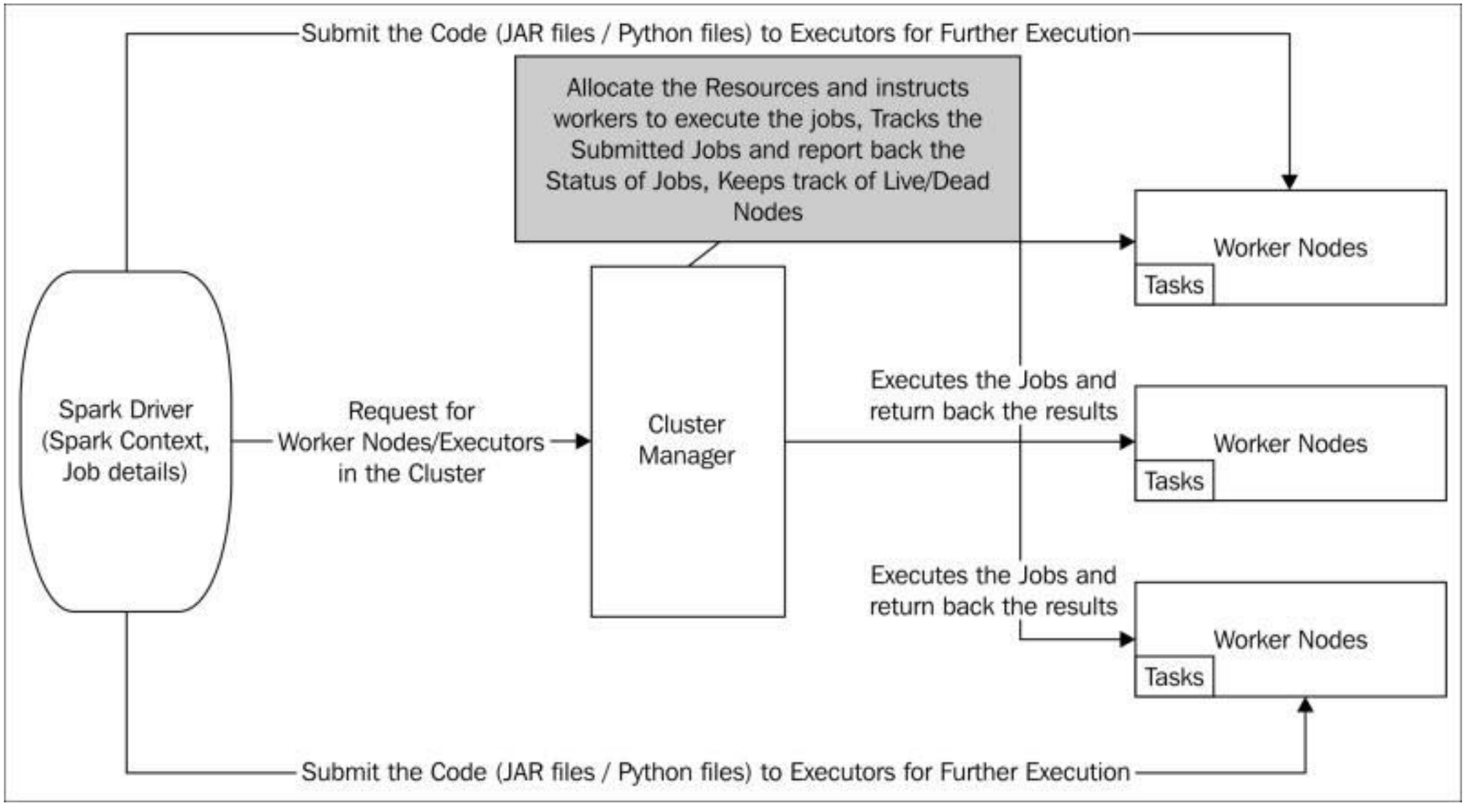
- DAGScheduler :Computes a DAG of stages for each job and submits them to TaskScheduler.

- TaskScheduler:Responsible for sending tasks to the cluster, running them, retrying if there are failures, and mitigating stragglers.

- BlockManager:Provides interfaces for putting and retrieving blocks both locally and remotely into various stores (memory, disk, and off-heap)

- Shuffle:The Transfer of Data between stages.

Jar Execution



For more details.

- https://github.com/JerryLead/SparkInternals
- https://github.com/JerryLead/SparkLearning

Thank You.