

Big Data Centric Neuroscience Applications  
(Functional Brain Networks, etc.)

Customized API

Data Analysis  
and Modeling  
Through  
Network  
Science

Predictive  
Modeling of  
Graphical  
Structures using  
Machine/Deep  
Learning

Computation,  
Communication,  
and I/O  
Characterization

Characteristics  
&  
Hints

Scalable **Graph** Processing and **Storage** Framework (**SGPS**)

High-Performance MapReduce Execution Engine

Graph Databases  
(Pregel)

NVMe-SSD/NVRAM-  
based Shuffle

NeuroScience Query  
aware Optimizations

Hadoop Distributed FileSystem (HDFS)

BurstBuffer-enhanced  
Storage Engine

NVMe-SSD/NVRAM  
Storage Schemes

NeuroScience  
Storage Schema

Multi-Core

NVRAM/NVMe-SSD

GPU/MIC

High Performance Networks with RDMA