

Communities: Requirements and Testing

L0: Applications

L1: Integration Tools: Workflow, Security, Portal, Pipelines ..

L2: Libraries: SPIDAL, R, Mahout...
Application Data Abstraction

Pilot Job and Map Collective Abstraction

L3: Scheduling and Run-Time Middleware

Query-Schema-Transport Data Abstraction

L4: Data Cyberinfrastructure

L5: Deployment Abstraction

Templated Appliances and Virtual Clusters

L6: Execution Environments
“Exascale” + Clouds

Examples

Taverna, Kepler, Pegasus

Clustering, Latent Dirichlet Allocation
...

Condor, Unicore, Globus ..
MPI, MapReduce

iRODS, SQL/NOSQL

..

Amazon, Azure, Google clouds
XSEDE, EGI, OSG ...