Functional View

Information View

Client
- ID : String
- Username : String
- Password : String

PBSConfig
- ModelType : String
- NodeAmount : int
- MPIAmount : int
- CPUAmount : int

MapReduceConfig
- MapFunction : Object
- ReduceFunction : Object
- DivideStrategy : Object

ComputeJob
- ID : String
- Name : String
- Data : Object
- Code : Object
- ClientID : String
- PBSConfig : PBSConfig
- MapReduceConfig : MapReduceConfig

WorkItem
- ID : String
- JobID : String
- Code : Object
- Data : Object

Scheduler
- FrontEndArray : FrontEnd[]
- QueueArray : Queue[]

FrontEnd
- ID : String
- CPUUsage : int
- ResponseTime : int

Queue
- ID : String
- PendingNumber : int
- QueueUsage : int

Terminal User

API User

VisTrails User

Compute

[solution]

[whole/sub problem]

[problem]

Map/Reduce

[Configuration]

[Confirmation]

[solution]

Prepare
Data

[request]

[request]

[data]
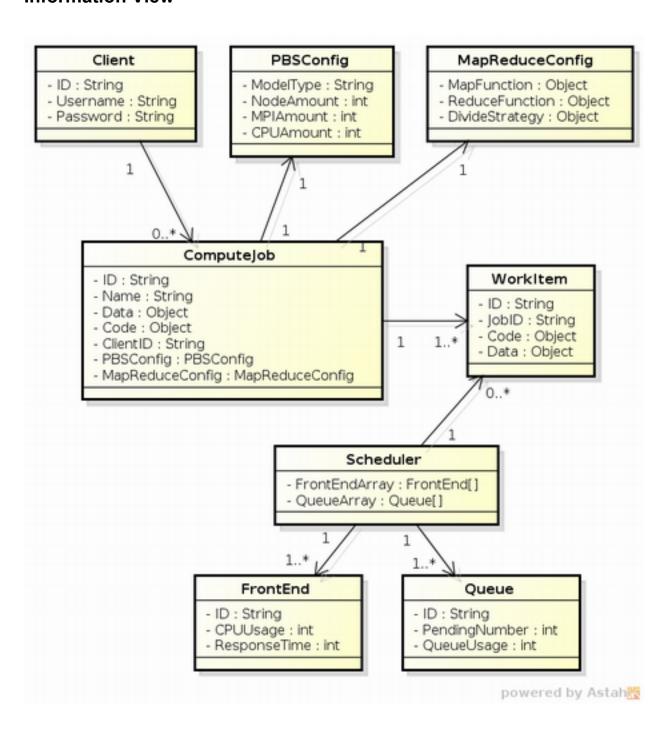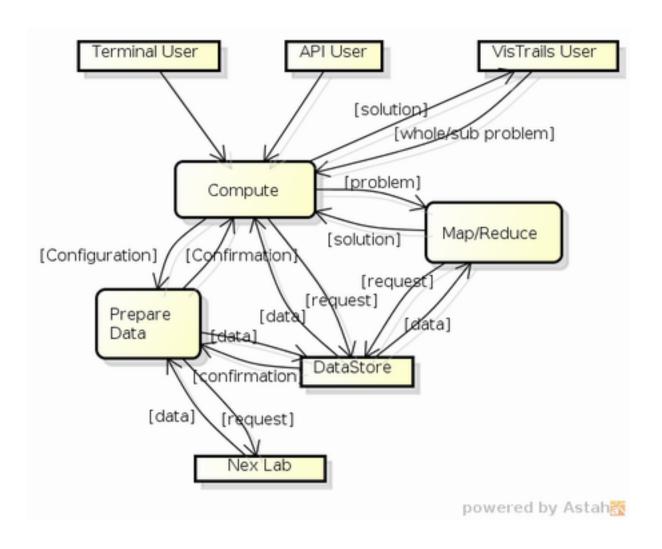
[data]

[data]

DataStore

[confirmation]

[data]

[request]

Nex Lab

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Deployment View

The deployment view contains the following 6 types of nodes:

Node Type	Description
VisTrails	The VisTrails node runs the VisTrails application to solve scientific problems. The HECC Adapter plug-in enables the VisTrails application to leverage HECC's computing resources.
Scheduler Server	The scheduler server coordinates the usage of HECC computing resources. The server connects to HECC's front-end and bridges servers via the SSH protocol and communicates with the Scheduler Agent to dispatch compute jobs requested by scientists. Scalability could be addressed by adding more scheduler servers and designing a mechanism to synchronize their status.
Pleiades Front-End Server	Pleiades has 14 front-ends servers which allow scientists to log on and submit compute jobs. The scheduler server accesses these servers on behalf of the scientists
Pleiades Bridge Server	Pleiades has 2 bridge servers which allow scientists to log on and submit compute jobs. They contain more memory than front-end nodes. The scheduler server accesses these servers on behalf of the scientists
Pleiades PBS Server	PBS (Portable Batch System) maintain different queues to manage the batch jobs that run on the four type of compute servers.
Pleiades Compute Server	Pleiades has 4 types of compute servers, each with different levels of computing capability.
Pleiades Storage Server	Storage servers allow scientists to save and retrieve their data.

Development View

Glossary