Design Document For HEP Senior Design

Josef Bostik Eric Pereira Ryan Wojtlya

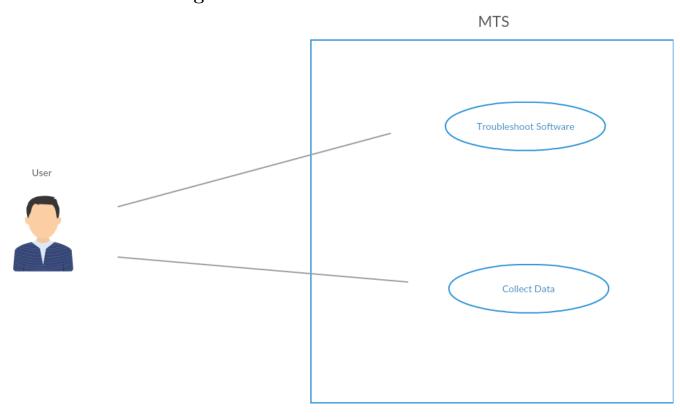
October 1^{st} , 2018

Contents

ITS
MTS Use Case Diagram
MTS Class Diagram
UML
Cluster 5
Software Overview
Cluster Use Case Diagram
EM Machines
Allocation Of Resources

MTS

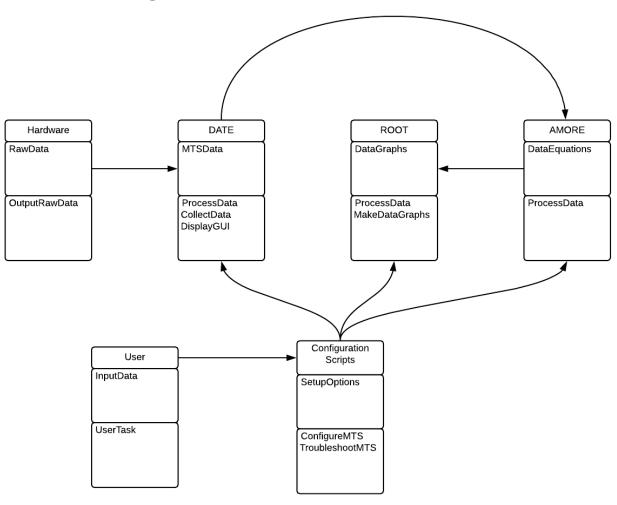
MTS Use Case Diagram:



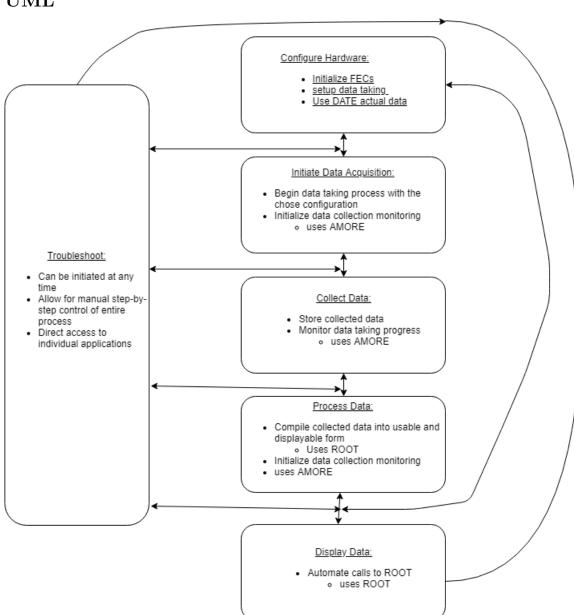
Requirement ID:	Requirement Type:	Scenario ID(s):	
Troubleshoot software	Functional	TS	
Requirement: The software designed shall have the capability of troubleshooting			
issues with the MTS.			
Rationale: When the MTS isn't functioning correctly, the software must be able			
to provide a reason to the user.			
Source: Client			
Acceptance Criterion: When the MTS isn't functioning, the script provides a			
reason in all test cases.			
Dependencies : MTS is not	functioning	Conflicts: N/A	
Supporting Materials: Requirements Document, Client			
Modification History: Last Modified 9/30/18			

Requirement ID:	Requirement Type:	Scenario ID(s):	
Configure Software	Functional	CS	
Requirement: The software designed shall configure the MTS based on the user's			
required functionality.			
Rationale: The user must be able to easily start the MTS and collect data. With-			
out a configuration script, the user would have to manually move data from one			
application to another.			
Source: Client			
Acceptance Criterion: Data is moved autonomously between software applica-			
tions DATE, ROOT, and AMORE.			
Dependencies: N/A		Conflicts: N/A	
Supporting Materials: Requirements Document, Client			
Modification History: Last Modified 9/30/18			

MTS Class Diagram:



UML



Cluster

Software Overview:

Software Structure

CE (Compute Element)

Sauid

 HTTP proxy which optimizes traffic, transfers data, adds security

Globus

Listens to the port

Tomcat

Works with GUMS

GUMS (Grid User Management Service)

Authenticates outside users and assigns them a local account

GridFTP

Ganglia

 Data transfer, works with Bestman

CDAD

 Gets jobs from CERN, sends to HTCondor-CE

and submitter

HTCondor & HTCondor-CE

• Job manager, scheduler,

RSV (Resource Service Validation)

Tests services

Monitors cluster

ROCKS

 makes everything work as a single unit

Nodes

Do actual job computation

SE (Storage Element)

XrootD

• Gets & distributes files from CERN

Phedex (PHysics Experiment Data EXport)

• Transfer management database

BESTMAN (BErkley STorage MANager)

 File storage, being replaced by HDFS (Hadoop Distributed File System)

NAS (Network Attached Storage)

NAS 0 (Network Attached Storage)

- Contains user directories
- Mounted on CE and compute nodes

NAS 1 (Network Attached Storage)

- Storage unit
- contains most big files

Cluster Use Case Diagram:

