MRO FTT/NAS & FLC

FTT/NAS #1 pre-SAT Software Requirements

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rev 1.0

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Change Record

Revision	Date	Author(s)	Change description
0.1	2017-07-20	JSY	Initial version
1.0	2017-08-02	JSY	New deployment to computers from AF; updated tasks

Objective

To describe the software deployment needed in the VCMF for pre-SAT testing of the first FTT/NA system.

Scope

This document enumerates the software components needed on each of the computers that will be installed in the VCMF for pre-SAT testing of FTT/NAS #1, and describes how the software system must be configured. Lists of tasks to enable pre-SAT and SAT are presented, covering both software installation and configuration and implementation of new functionality.

Reference Documents

RD1 FTT/NAS SAT Requirements (MRO-PLA-CAM-1100-0178) – rev 1.0, November 17th 2015

RD2 Software Release Notes (MRO-MAN-CAM-1160-0163) – rev 1.11, July 7th 2017

Acronyms and Abbreviations

AMOS Advanced Mechanical and Optical Systems (UTM vendor)

FTT Fast Tip-Tilt

GUI Graphical User Interface

ICD Interface Control Document

ISS Interferometer Supervisory System

MROI Magdalena Ridge Observatory Interferometer

NAS Narrow-field Acquisition System

SATs Site Acceptance Tests

UML Unified Modelling Language

UT Unit Telescope

UTCS Unit Telescope (Mount) Control System

UTM Unit Telescope Mount

VCMF Visitor Center and Maintenance Facility

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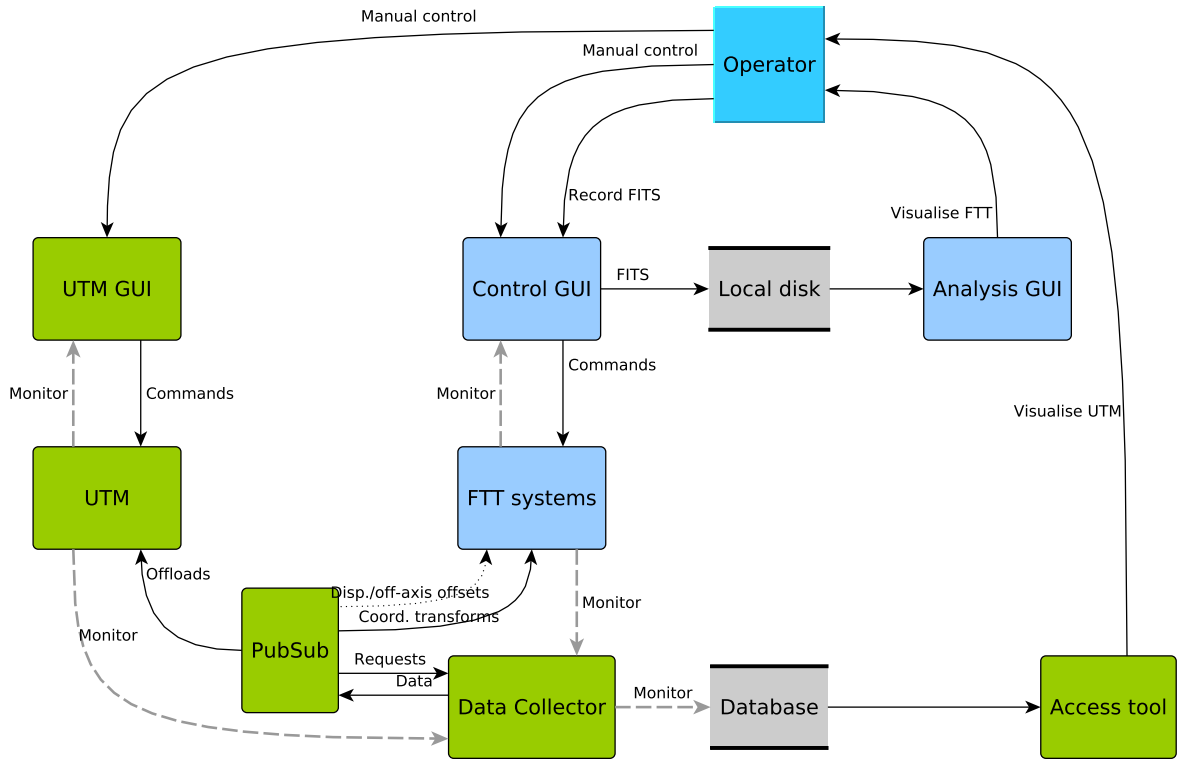

Figure 1: Data flow diagram showing the primary use case for initial on-sky tests of FTT/NAS #1, based on scenario C from RD1. Here the "operator" is a human operator. The FTT system and environment controllers are combined into a single rectangle for brevity. Software components delivered by Cambridge are shown as light blue rectangles.

1 Introduction

A range of scenarios for the implementation status and deployment of the FTT/NAS and ISS software components were discussed with MRO staff in late 2015. The possible scenarios are described in RD1, which concludes that a scenario ("scenario C") using the ISS publish-subscribe system to interface the FTT and UTM software is the minimum needed to carry out all of the FTT/NAS Site Acceptance Tests. We propose to realise this scenario for the forthcoming pre-SAT tests of FTT/NAS #1. A diagram of the intended scenario is shown in Fig. 1.

2 Software Deployment

The pre-SAT tests of the first FTT/NA system will require the following computers to be set up in the VCMF and connected to the local network in order to run the FTT software components:

ut01-fttcam the main FTT/NAS rack-mount computer, to run FTTCamSystem under Xenomai;

ut01-fttenv the Raspberry Pi 3B in the FTT electronics chassis, to run FTTEnvSystem under Raspbian Linux. This computer will be shipped from Cambridge with the FTT hardware; and

ut01-fttgui a computer to run the FTT control and analysis GUIs. Data recorded by fttgui will be stored on the local disk of this computer.

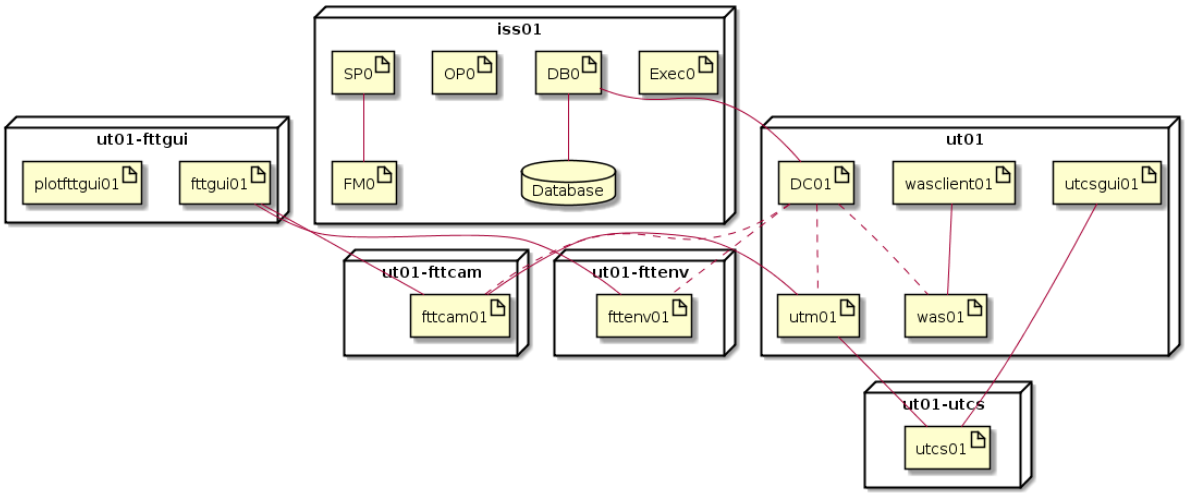

Figure 2: UML deployment diagram showing the primary use case for initial on-sky tests of FTT/NAS #1, based on scenario C from RD1.

Other computers will be needed to run the ISS, UTM and WAS software. The following is a preliminary list:

utcs01 a computer to run the AMOS-supplied UTCS;

ut01 a computer to run the UTM (the UTCS to ISS adapter) and WAS applications, the ISS Data Collector, and the UTCS and WAS GUIs; and

iss01 a computer to run the main ISS components.

Please note that the computer names in the above lists are not necessarily the IP names that will be used in the real deployment. The real names will be decided in consultation with MRO staff. The same server may be used to run ut01 and iss01 as virtual machines.

With the exception of the Raspberry Pi, MRO staff must set up all of the above computers in the VCMF and install and test the required software before pre-SAT commences (see Section 3). The installation procedures for the Cambridge-supplied software components are described in RD2. Installation of the ISS, UTM, and WAS software is beyond the scope of this document.

The ISS must be configured to run the software applications listed in Table 1. Some other applications, listed in Table 2, must be started manually because the ISS Executive is not yet able to start them. Both the ISS and non-ISS applications are shown in the UML deployment diagram in Fig. 2.

Instance	System type	Computer	Server	Client
Exec0	Executive	iss01	supervisorySystem.jar	supervisorySystem.jar
DB0	DatabaseManager	iss01	supervisorySystem.jar	supervisorySystem.jar
OP0	Operator	iss01	supervisorySystem.jar	supervisorySystem.jar
SP0	Supervisor	iss01	supervisorySystem.jar	supervisorySystem.jar
FM0	FaultManager	iss01	supervisorySystem.jar	supervisorySystem.jar
DC01	DataCollector	ut01	supervisorySystem.jar	supervisorySystem.jar
utm01	UTM	ut01	utm.jar	utm.jar
was01	WAS	ut01	WAS.jar	WAS.jar
fttcam01	FTTCamSystem_ucamcontrol	ut01-fttcam	FTTCamSystem_ucamcontrol.exe	FTTCamSystem.jar
fttenv01	FTTEnvSystem_ucamcontrol	ut01-fttenv	FTTEnvSystem_ucamcontrol.exe	FTTEnvSystem.jar

Table 1: The software applications that must be started by the ISS Executive in order to realise the scenario shown in Fig. 1.

Instance	Application	Computer
utcs01	UTCS (AMOS)	utcs01
utcsgui01	UTCS GUI (AMOS)	ut01
wasclient01	WAS viewer client	ut01
fttgui01	fttgui	ut01-fttgui
plotfttgui01	plotfttgui	ut01-fttgui

Table 2: The software applications that must be started independently of the ISS in order to realise the scenario shown in Fig. 1. The instance names given in the first column are for cross-referencing with Fig. 2.

3 Remaining Tasks

Preliminary lists of software-related tasks to enable pre-SAT and full SAT respectively are presented in the sub-sections below.

3.1 Tasks to enable pre-SAT

- ☑ Release FTT software release 5 [Cam]
- ☑ Release ISS V2 [MRO]
- ☐ Integrate FTT software with ISS V2 build [MRO]
- ☐ Test FTT software under ISS V2 [Cam]
- ☐ Release FTT software release 6 [Cam]
  - ☐ Fix any incompatibilities with ISS V2
  - ☐ Implement coordinate transformations
  - ☐ Update software ICDs
  - ☐ Update documentation
- ☐ Implement connection to UTCS offload socket interface [MRO]
- ☐ Implement UTM monitor data access tool [MRO]
- ☐ Set up network and computers in VCMF [MRO]

- ☐ Install software on VCMF computers [MRO]

3.2 Tasks to enable SAT

- ☐ FTT software release 7 [Cam]
  - ☐ Fix issues identified at pre-SAT
  - ☐ Implement dispersion/off-axis offsets
  - ☐ Implement sinusoidal dither
  - ☐ Update software ICDs
  - ☐ Update documentation
- ☐ Implement UT umbrella system (optional) [MRO]
- ☐ Integrate FTT control GUI with ISS Operator (optional) [MRO/Cam]
- ☐ Integrate UTCS GUI with ISS Operator (optional) [MRO]
- ☐ Integrate WAS viewer client with ISS Operator (optional) [MRO]