Cluster Science Data System
Software Test Plan
for the Scandinavian Data Centre

Alfvén Laboratory, Royal Institute of Technology Stockholm

Document Status Sheet			
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Draft	0	94 Aug. 25	New document
0	1	94 Dec 16	Removed author names. The Gantt chart was replaced by text in section 4.2. For the master schedule, reference is made to the CSDS system level test plan [Ref. 1]. Changed the headline of section 4. Changed the headline of section 4.5. Changed headline of section 5. Filled in a TBD in section 5.3. Sections 6 to 9 have been added. Added the list of required data in section 7.2.

Contents

1 Purpose

The purpose of this document is to describe the software verification and validation plans for the Scandinavian Data Centre (SDC) for the detailed design development phase.

References

[1] M. Nesbit (editor). cluster Science Data System, system level test plan. Technical Report DS-EST-PL-0001, ESTEC, October 1994.

[2] S. Skogvold (editor). CSDS overall interface document. Technical Report DS-EST-ID-0001, ESTEC, September 1994.

[3] G. Holmgren. Cluster EFW data analysis system, project plan. Technical report, IRF-U, September 1993.

[4] G. Holmgren. Scandinavian data centre, user requirements. Technical Report DS-SDC-UR-0001, Swedish Institute of Space Physics, Uppsala Division, September 1993.

[5] G. Holmgren, P-A. Lindqvist, and B. H. Nilsson. Cluster science data system software requirements for the Scandinavian data centre. Technical Report DS-SDC-SR-0001, Swedish Institute of Space Physics, Uppsala Division, December 1993.

[6] B-H Nilsson, P-A Lindqvist, G Holmgren, and A Lundgren. Cluster Science Data System, Architectural Design for the Scandinavian Data Centre. Technical Report DS-SDC-AD-0001, KTH, October 1994. Issue 1.4.

3 Acronyms

Acronym	Meaning
C	A programming language
CDDS	Cluster Data Disposition System
CDDS file	New notation for SHF
CDF	Common Data Format
CD-ROM	Compact Disc Read Only Memory
CoI	Co-investigator
CSDS	Cluster Science Data System
DAT	Digital Audio Tape
DB	Data Base
DEC	Digital Equipment Corporation
EFW	Electric Field and Wave Experiment
FGM	Flux Gate Magnetometer
FORTRAN	FORmula TRANslator
IRF-U	Institutet för Rymdfysik, Uppsalaavdelningen
	Swedish Inst. of Space Phys., Uppsala Division
ISDAT	Interactive Science Data Analysis Tool
KTH	Kungliga Tekniska Högskolan
	Royal Institute of Technology
NDC	National Data Centre
PI	Principal Investigator
PP	Prime Parameter
PPDB	Prime Parameter Data Base
RDM	Raw Data Medium
RFA	Request for Action
SDC	Scandinavian Data Centre
SPDB	Summary Parameter Data Base
SPL	Summary Plot
SVVT	Software validation and verification test
TBD	To be defined
TBW	To be written

Table 1: Acronyms

4 Test Plan Overview

4.1 Organisation

The organisation of the SDC software development is described in [Ref. 3].

4.2 Master Schedule

The master schedule for the CSDS system level tests is given in [Ref. 1]. Currently test are scheduled as follows:

Test	Scheduled period
Unit tests	Included in coding tasks
SDC SVVT	weeks 15 - 19 1995
CSDS Validation tests	week 20 - 27 1995
CSDS Verification tests	week 40 - 41 1995

However, [Ref. 1] should be consulted for the actual dates.

4.3 Resources Summary

The verification and validation activities will be performed by the ordinary SDC technical manager and programming staff, see [Ref. 3] using equipment intended for the production phase.

4.4 Responsibilities

The unit level tests are the responsibilities of the programmers. For external software, it is the responsibility of the SDC manager. The responsibility for the SDC verification and validation test lies with the SDC technical manager. ESTEC have the responsibility for the CSDS level tests as described in [Ref. 1].

4.5 Overview of the tests

The following tests will be performed:

Unit tests as described in section 6, page 4.

SDC sub-system validation tests as described in section 7, page 5.

CSDS system validation as described in section 8, page 6.

CSDS system verification test as described in section 9, page 7.

5 Administrative Procedures

5.1 Anomaly reporting and resolution

Anomalies should be reported to the SDC progress meetings by the SDC technical manager. It is then up to the SDC project team to take action from case to case.

5.2 Task iteration policy

In the case of code modifications, the tests should start from the beginning after the modification.

5.3 Deviation policy

All deviations from the baseline will be reported to the IWG meetings.

5.4 Control procedures

No control procedures beyond the SDC project meetings reports will be applied.

5.5 Standards, practices and conventions

Standards and conventions are described in [Ref. **?**].

6 Unit Test Plan

6.1 Purpose of unit tests

The purpose of the SDC unit tests is to test and verify the source code at the end of the coding phase. The unit tests should ensure compatibility with the detailed design [Ref. **?**] and the architectural design [Ref. 6].

6.2 Unit test activities

6.2.1 Code inspection

On unit level, the software will be manually checked against the SDC detailed design document [Ref. **?**]. The following verifications will be performed where applicable:

- Functionality
- Performance
- Recovery from invalid input
- Coding standards
- Resource consumption
- Human interface factors

- Conformance with the software manuals
- Ease of integration

The code inspection task is the responsibility of the SDC technical manager.

6.2.2 Functionality test

The functionality of the units will be tested during the coding phase. However, formal functionality and interface tests will not be required until the SDC integration tests, see section 7. The functionality test at unit level is the responsibility of the programmer.

6.2.3 Unit test reporting

There will be no formal written reporting on the unit level. However, all anomalies should be reported to the regular SDC progress meetings.

6.3 Units to be tested

Unit tests will cover SDC developed modules as well as external software. Examples of external software are:

- CSDS User Interface
- ISDAT server and client modules
- CDF software

7 SDC Validation and Verification Test (SVVT) Plan

7.1 Purpose of the SVVT

The purpose of this test is to verify the fulfilment of the software requirements [Ref. 5] and user requirements [Ref. 4] after the SDC sub-system integration. This test will also validate some software manuals. The SDC technical manager is responsible for the SVVT.

7.2 SDC SVVT set-up and prerequisites

The SVVT will be performed on the production platform and environment at the SDC in Stockholm. The need for external products is described in the CSDS overall interface document [Ref. 2] for the development phase. Explicitly needed for the tests are:

Code	Name	From	To	TyFo	Date Required
AXDD001	Test PPDB Data for ASPOC	ACDC	> SDC	D C	1995-02-27
AXDD002	Test SPDB Data for ASPOC	ACDC	> SDC	D C	1995-02-27
FXDD001	Test PPDB Data for CIS	CFC	> SDC	D C	1995-02-27
FXDD002	Test SPDB Data for CIS	CFC	> SDC	D C	1995-02-27
FXDD003	Test PPDB Data for STAFF	CFC	> SDC	D C	1995-02-27
FXDD004	Test SPDB Data for STAFF	CFC	> SDC	D C	1995-02-27
FXDD005	Test PPDB Data for WHISPER	CFC	> SDC	D C	1995-02-27
FXDD006	Test SPDB Data for WHISPER	CFC	> SDC	D C	1995-02-27
GXDD001	Test PPDB Data for EDI	GCDC	> SDC	D C	1995-02-27
GXDD002	Test SPDB Data for EDI	GCDC	> SDC	D C	1995-02-27
GXDD003	Test PPDB Data for RAPID	GCDC	> SDC	D C	1995-02-27
GXDD004	Test SPDB Data for RAPID	GCDC	> SDC	D C	1995-02-27
GXDD005	Test Summary Plot Data for	GCDC	> SDC	D P	1995-02-27
HXDD001	Test PPDB data for Auxiliary	HDC	> SDC	D C	1995-02-27
HXDD002	Test SPDB data for Auxiliary	HDC	> SDC	D C	1995-02-27
ISCD001	FGM calibration SW and data	FGM PI	> SDC	C ?	1995-01-01
KXDD001	Test PPDB Data for FGM	UKDC	> SDC	D C	1995-02-27
KXDD002	Test SPDB Data for FGM	UKDC	> SDC	D C	1995-02-27
KXDD003	Test PPDB Data for PEACE	UKDC	> SDC	D C	1995-02-27
KXDD004	Test SPDB Data for PEACE	UKDC	> SDC	D C	1995-02-27
KXDD005	Test PPDB Data for DWP	UKDC	> SDC	D C	1995-02-27
KXDD006	Test SPDB Data for DWP	UKDC	> SDC	D C	1995-02-27
OXDD001	Test data on RDM	ESOC	> SDC	D S	1995-02-27
OXDD002	CDDS test data	ESOC	> SDC	D ?	1995-02-27
TXSD001	CSDS UI SW	ESTEC	> SDC	S ?	1995-02-27

where the code is explained in [Ref. 2].

7.3 SDC Verification and Validation Test Procedure

The SDC SVVT procedure is available as the TBD ASCII file. The file is included in Appendix 7.3 of this document. For the actual test it is recommended to make a copy of the file in the test documentation directory, follow the procedure and make notes directly in the copied file in a terminal window during the test.

8 CSDS Validation Test Plan

8.1 CSDS Validation test purpose

the purpose of the CSDS Validation is to have an end to end test of the integrated CSDS system. It also constitutes an acceptance test of the sub-systems.

8.2 CSDS Validation Procedure

For the SDC, a sub-set of the SVVT procedures will be used, TBD.

9 CSDS Verification Test Plan

9.1 CSDS Verification test purpose

The purpose of the CSDS verification is to constitute a readiness test of the complete CSDS.

9.2 CSDS Verification procedure

The CSDS verification will consist of a review of the CSDS validation completeness as described in [Ref. 1].

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SDC validation and verification Procedure
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Part I Introduction
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I.1 Platform hardware:.....................

I.2 Platform ID [IP number and name]:.........

I.3 Operative system:.....................

I.4 Motif version:.........................

I.5 CDF version:...........................

I.6 ISDAT version:.........................

I.7 Input data file(s):.....................

I.8 Date of Test Start:.....................

I.9 Time of test start:.....................

I.10 Place of test:.........................

I.11 Test performed by:.....................

Part II Unit Tests Completeness
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II.1 UT 1. Reception Unit Test
     Action: Inspect the UT Test Notes
     Expected Result: No remaining deficiencies.

     Actual result:.........................

     Remarks: ..............................


II.2 UT 2.Interactive Processing Unit Test
     Action: Inspect the UT Test Notes
     Expected Result: No remaining deficiencies.

     Actual result:.........................
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     Remarks:.............................


II.3 UT 3. DB Server Unit Test
     Action: Inspect the UT Test Notes
     Expected Result: No remaining deficiencies.

     Actual result:.........................

     Remarks:.............................


II.4 UT 4. EFW DB Production Unit Test
     Action: Inspect the UT Test Notes
     Expected Result: No remaining deficiencies.

     Actual result:.........................

     Remarks:.............................


II.5 UT 5. SDC User Interface Unit Test
     Action: Inspect the UT Test Notes
     Expected Result: No remaining deficiencies.

     Actual result:.........................

     Remarks:.............................


II.5 UT 6. CSDS User Interface Unit Test
     Action: Inspect the UT Test Notes
     Expected Result: No remaining deficiencies.

     Actual result:.........................

     Remarks:.............................


Part III Compliance with the Architectural design / User requirements
---------------------------------------------------------------------

III.1  UR-SDC-101 Produce and make EFW CSDS DB available to NDC's
       Procedure: TBD
       Expected result: TBD
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       Actual result:.............................

       Remarks:...................................


III.2  UR-SDC-102 Make summary plots available
       Procedure: TBD
       Expected result: TBD

       Actual result:.............................

       Remarks:...................................


III.3  UR-SDC-103 Store SPDB data for all Cluster
       Procedure: TBD
       Expected result: TBD

       Actual result:.............................

       Remarks:...................................


III.4  UR-SDC-104 Store 4 months of PPDB
       Procedure: TBD
       Expected result: TBD

       Actual result:.............................

       Remarks:...................................


III.5  UR-SDC-105 Access CDDS
       Procedure: TBD
       Expected result: TBD

       Actual result:.............................

       Remarks:...................................


III.6  UR-SDC-106 Tools for EFW health and safety check
       Procedure: TBD
       Expected result: TBD

       Actual result:.............................
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       Remarks:.....................................


III.7  UR-SDC-107 Tools to update EFW calibration file
       Procedure: TBD
       Expected result: TBD

       Actual result:..............................

       Remarks:.....................................


III.8  UR-SDC-110 Access to summary plots
       Procedure: TBD
       Expected result: TBD

       Actual result:..............................

       Remarks:.....................................


III.9  UR-SDC-113 Provide access control       Procedure: TBD
       Expected result: TBD

       Actual result:..............................

       Remarks:.....................................


III.10 UR-SDC-115 Tracking of software versions
       Procedure: TBD
       Expected result: TBD

       Actual result:..............................

       Remarks:.....................................


III.11 UR-SDC-116 Mechanism for PI validation of DB
       Procedure: TBD
       Expected result: TBD

       Actual result:..............................

       Remarks:.....................................
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III.12 UR-SDC-122 Provide an operator interface
Procedure: TBD
Expected result: TBD

Actual result:.....

Remarks:.....

III.13 UR-SDC-123 Experimenters interface.
Procedure: TBD
Expected result: TBD

Actual result:.....

Remarks:.....

III.14 UR-SDC-124 Quality check of RDM
Procedure: TBD
Expected result: TBD

Actual result:.....

Remarks:.....

III.15 UR-SDC-125 Maintain EFW command log
Procedure: TBD
Expected result: TBD

Actual result:.....

Remarks:.....

III.16 UR-SDC-127 Provide network access
Procedure: TBD
Expected result: TBD

Actual result:.....

Remarks:.....

Part IV Conclusions

IV.1 Review the test notes from the beginning and list the items that are not complete.

Test Items not complete:.....

.....

IV.2 Date of test conclusion:.....

VI.3 Time of test completion:.....

IV.4 Remove write access of all files in the test directory

VI.5 End of the integration test