

Software Development Plan (SDP)

Open Data Interface (ODI)
ESTEC/Contract No. 21964/08/NL/AT

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1 Introduction

This document describes the software development plan for the ODI software.

2 Applicable and reference documents

ODI/SOW ODI Statement of Work

ODI/SSS ODI Software System Specification

ODI/TN/DB Technical Note on the ODI Database

ODI/TN/SSS TN on SAAPS/SEDAT/SPENVIS adaption for ODI

ODI/AG ODI Administrator Guide

ODI/UG ODI User Guide

E401B ECSS-E40 Part 1B

E402B ECSS-E40 Part 2B

M40C ECSS-M-ST-40C Rev. 1

3 Terms, definitions and abbreviated terms

CDF Common Data Format

ODI Open Data interface

PRBEM Panel on Radiation Belt Environment Modeling

SAAPS Satellite Anomaly Analysis and Prediction System

SCF Software Configuration File

SEDAT Space Environment Data Analysis Tool

SOW Statement of Work for ESTEC/Contract No. 21964/08/NL/AT

SPENVIS Space Environment Information System

SQL Structured Query Language

4 Software project management approach

4.1 Management objectives and priorities

The project management follows the management principles of small size research organisation with experience of international hardware, software, and study projects in the field of space research. Considering the relatively small size of the project, it is necessary to keep the management and control functions efficient but at the same time within reasonable limits.

The overall management is the responsibility of the Contractor and the Study Manager.

The management and project control is defined in a separate work package (WP700) and is lead by the Administrative Manager.

The Administrative Manager has full control of, and responsibility for, the means by which the budget is spent. He has the full authority to represent IRF and make all necessary decisions for this project. The Administrative Manager also plays the role of Contracts Officer.

4.2 Master schedule

N/A

4.3 Assumptions, dependencies and constraints

Initially the project depends on the following software:

- MySQL,
- Apache,
- IDL and IDL Dataminer,
- CDF,
- PHP,
- Perl,
- Java.

In addition to this software external to ODI will be updated to work against ODI:

- SAAPS,
- SEDAT,
- SPENVIS.

Additional software will be identified during the development.

4.4 Work breakdown structure

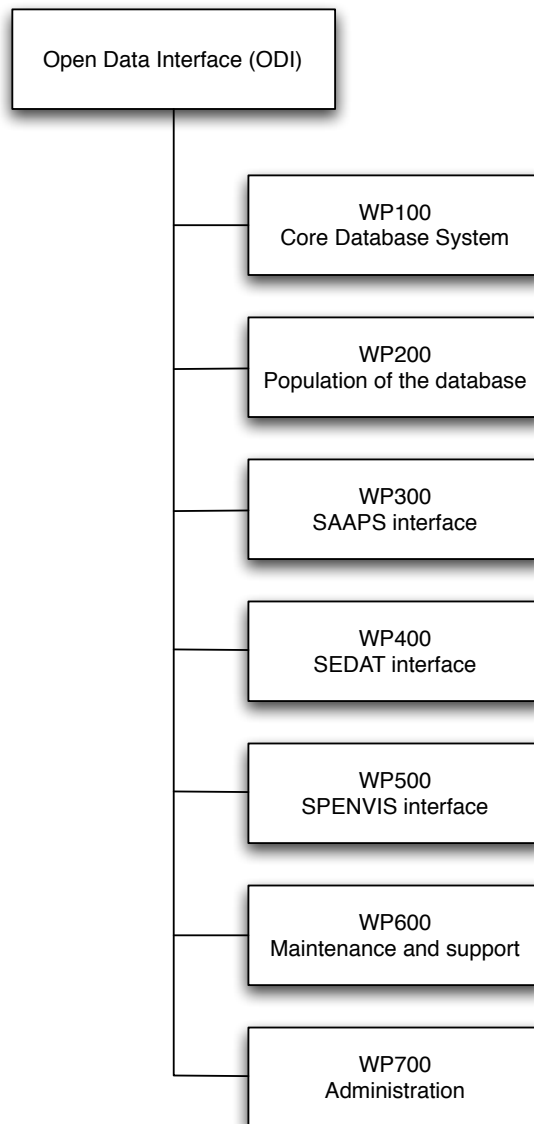


Figure 1: The figure shows the breakdown into work packages.

PROJECT: ODI	WP REF: 100
WP TITLE: Core Database System CONTRACTOR: IRF MAJOR CONSTITUENT: Develop database Start event: KO End event: Operational database WP Manager: Peter Wintoft	
Description <ul style="list-style-type: none"> • Identify and agree on data sets that shall enter the ODI database. • Define structure of database. • Define structure of meta-data. • Identify accounts and account levels of the database server. • Set up a MySQL server with the identified accounts. • Implement an interface to access and manipulate the database. • Create tables to hold identified data and meta-data. <p>The following system need to be set up by ESTEC at ESTEC</p> <ul style="list-style-type: none"> • MySQL server, • Apache server • IDL licences • PHP • Perl • Java • ftp and http connections for downloading data • database user creation and access rights <p>Output</p> <ul style="list-style-type: none"> • MySQL database (not populated with data) (S1). • Documents D1 (applicable parts), D2, and D3. 	

PROJECT: ODI	WP REF: 200
WP TITLE: Population of database CONTRACTOR: IRF MAJOR CONSTITUENT: Populate the database with data Start event: WP100 End event: Database with data WP Manager: Daniel Heynderickx	
Description <ul style="list-style-type: none">• Identify data sources of the data that shall enter the database.• Identify the meta-data.• Write code to automatically collect and store data into the database.• Store data and meta-data into the database. Output <ul style="list-style-type: none">• MySQL database populated with data (S2).• Code for collecting and storing data (S2).• Documents D1 (updated) and D3 (updated).	

PROJECT: ODI	WP REF: 300
WP TITLE: SAAPS interface CONTRACTOR: IRF MAJOR CONSTITUENT: Develop the SAAPS interface Start event: WP200 Planned date: 2009-01-10 End event: Functional SAAPS interface Planned date: 2009-04-01 WP Manager: Peter Wintoft	
Description <ul style="list-style-type: none">• Identify routines in SAAPS that access the SAAPS database.• Define changes of SAAPS to access the ODI database.• Write code with SAAPS/ODI routines.• Implement code. Output <ul style="list-style-type: none">• Code with SAAPS/ODI interface (S3).• Documents D1 (updated) and D4 (SAAPS part).	

PROJECT: ODI	WP REF: 400
WP TITLE: SEDAT interface CONTRACTOR: IRF MAJOR CONSTITUENT: Develop the SEDAT interface Start event: WP200 Planned date: 2009-01-10 End event: Functional SEDAT interface Planned date: 2009-04-01 WP Manager: Daniel Heynderickx	
Description <ul style="list-style-type: none">• Identify routines in SEDAT that access the SEDAT database.• Define changes of SEDAT to access the ODI database.• Write code with SEDAT/ODI routines.• Implement code. Output <ul style="list-style-type: none">• Code with SEDAT/ODI interface (S4).• Documents D1 (updated) and D4 (SEDAT part).	

PROJECT: ODI	WP REF: 500
WP TITLE: SPENVIS interface CONTRACTOR: IRF MAJOR CONSTITUENT: Develop SPENVIS interface Start event: WP200 Planned date: 2009-01-10 End event: Functional SPENVIS interface Planned date: 2009-04-01 WP Manager: Daniel Heynderickx	
Description <ul style="list-style-type: none">• Identify routines in SPENVIS that access the SPENVIS database.• Define changes of SPENVIS to access the ODI database.• Write code with SPENVIS/ODI routines.• Implement code. Output <ul style="list-style-type: none">• Code with SPENVIS/ODI interface (S5).• Documents D1 (updated) and D4 (SPENVIS part).	

PROJECT: ODI	WP REF: 600
WP TITLE: Maintenance CONTRACTOR: IRF MAJOR CONSTITUENT: Maintain and support ODI Start event: WP400, WP300, WP500 Planned date: 2009-04-01 End event: Test document Planned date: 2009-10-01 WP Manager: Peter Wintoft	
Description <ul style="list-style-type: none">• Verify that the ODI database is functioning by logging on to the system once per week.• Verify that the ODI data are up to date once per week.• Verify that SAAPS/ODI is functioning once per week.• Verify that SEDAT/ODI is functioning once per week.• Verify that SPENVIS/ODI is functioning once per week.• Solve issues encountered above. Output <ul style="list-style-type: none">• Reporting as part of the monthly reports.	

PROJECT: ODI	WP REF: 700
WP TITLE: Administration CONTRACTOR: IRF MAJOR CONSTITUENT: ODI project administration Start event: KO End event: Final report WP Manager: Lars Eliasson	Planned date: 2008-10-01 Planned date: 2009-10-01
Description <ul style="list-style-type: none"> • Manage invoices to be sent to ESA. • Manage payments from ESA. • Manage invoices from sub-contractor. • Manage payments to sub-contractor. • Keep track of documents to be delivered according to the RFQ. • Write monthly reports and notify ESA. Output <ul style="list-style-type: none"> • Monthly reports. • Documents D5 and D6. 	

4.5 Risk management

None.

4.6 Monitoring and controlling mechanisms

The monitoring and controlling is captured in WP700.

4.7 Staffing plan

The study team is composed of scientists from the Swedish Institute of Space Physics (IRF) and DH Consultancy (DHC).

Dr. Lars Eliasson, director of IRF, will be the Administrative Manager. As such he will be the point of contact in all contractual matters with ESA. He will also handle contractual matters with the sub-contractor (DHC).

Dr. Peter Wintoft will be the Study and Technical Manager. As such he will be the point of contact for all technical matters with ESA.

4.8 Software procurement process

The following software items have been identified:

Software	Version
MySQL	5.0
Apache	2
IDL and IDL Dataminer	7.0
CDF	3.1
PHP	5.5
Perl	5.8
Java	1.5

4.9 Supplier management

N/A

5 Software development approach

5.1 Strategy to the software development

The software will be developed according to the WP's. The progress of the software will be continuously monitored by the Agency.

5.2 Software project development life cycle

5.2.1 Software development life cycle identification

The software will be developed according to the waterfall model:

1. Requirements.
2. Design.
3. Implementation.
4. Verification.
5. Maintenance.

Subversion¹ will be used for software version control.

5.2.2 Relationship with the system development cycle

See Management Proposal.

¹<http://subversion.tigris.org/>

5.2.3 Reviews and milestones identification and associated documentation

See Management Proposal.

5.3 Software engineering standards and techniques

The software development will follow that of ECSS-E-ST-40C. However, the process is simplified due to the small size of the project.

5.4 Software development and software testing environment

The software will be developed for the Unix operating system. The system shall be tested on an Open Suse Linux system at the Agency.

5.5 Software documentation plan

5.5.1 General

See Software Configuration File (SCF).

5.5.2 Software documentation identification

See SCF.

5.5.3 Deliverable items

See SCF.

5.5.4 Software documentation standards

The documentation follows the SOW and ECSS-E-ST-40C (6 March 2009).

5.5.5 This Standards tailoring traceability

See SOW.