

Appendix 4

EDRS European Data Relay Satellite System

Project Implementation Plan

European Space research and Technology Centre
(ESTEC)

European Space Agency

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1 Introduction

The EDRS Programme Implementation Plan (PIP) provides the overall Management framework, the governing principles and the responsibilities of the parties involved for the execution of the work under the EDRS contract.

The goal is to complement the specific requirements and tasks defined in the Contractual Baseline Documents, applicable to the Operator, and document the proposed Management approach towards implementing the Programme.

2 Tasks and Responsibilities of the Parties

The following paragraphs reiterate the major tasks and responsibilities of ESA and the Operator in the frame of the EDRS programme.

2.1 ESA Tasks and Responsibilities

ESA will establish the overall framework of the EDRS programme, and will perform the following principal tasks:

- Technical, programmatic and contractual monitoring of the system / satellite / payload and equipment definition, development, integration, testing and LEOP activities, to ensure compliance with the agreed EDRS programme requirements
- Provision funding and issuing of payments in accordance with the milestone payment plan agreed with the Operator (Annex 1 of the contract)

2.2 Operator Tasks and Responsibilities

The major responsibilities of the Operator are detailed in the Statement of Work and include

- EDRS mission definition, specification and procurement of all the EDRS Satellite System elements (EDRS-A, EDRS-B and EDRS-C, EDRS Ground Segment as well as all required GSE)
- negotiation and overall management of the EDRS industrial contract(s) with the selected industrial prime contractor(s)
- provision of funding and execution of payments in accordance with the financial baseline agreed with the industrial contractor(s).
- Selection of Piggyback (EDRS-A/B) carrier Operator and technical, programmatic and contractual management of all Piggyback payload accommodation, integration, verification, launch, commissioning and operation activities.
- Definition, procurement, integration, testing and operations of the Operator's own additional payloads to be embarked into the EDRS-C satellite, in compliance with the agreed EDRS programme requirements.
- Definition and implementation of Ground infrastructure required for EDRS in-orbit commissioning and operations
- Launch Services procurement and Launch Campaign implementation for EDRS-C

- Operation, inclusive platform and payload health monitoring of the EDRS payloads (EDRS-A and EDRS-B) and satellite (EDRS-C) throughout its nominal operating life and regular reporting to ESA.
- Provide ESA with the necessary Data Relay and related services via satellite according to the agreed Service Level Agreement (SLA) for the nominal lifetime of the EDRS infrastructure (15yrs).

3 Programme Management

3.1 General

ESA and the Operator will establish a project management structure with clear definition of responsibilities, authority and reporting lines. Each project manager will be responsible for setting up a team and for nomination of points of contact in the relevant areas of responsibility for the technical interfacing between the project teams.

In ESA the EDRS Project will be managed through the EDRS Programme Office. The ESA EDRS Programme Management team will be based in Noordwijk, Netherlands.

The Operator will establish a core project team for the management and technical monitoring of the EDRS activities. To this end, the operator will ensure that ESA will have access to technical information and premises of the industrial contractor(s) in charge of either element of the EDRS Programme. If necessary the Operator will make arrangements for the co-location of an ESA team at the industrial contractor(s) premises for the duration required to complete the EDRS related work.

Both parties will provide a list of key personnel and their respective role and responsibility in the teams. Should these change during the course of the Programme Implementation, such changes will be formally notified to other party in advance.

ESA and the operator will agree on a formal communication protocol to ensure timely transmission of EDRS programme information and documentation between all the parties involved in the execution of the EDRS Programme.

3.2 ESA Project Team

As a minimum the ESA EDRS team will comprise;

- Project Manager
- Deputy Project Manager
- Project Controller
- Contracts Manager
- Implementation Manager
- System Manager
- Product Assurance Manager

In addition the team will be supported by Payload specialists, and general engineering support (mechanical, thermal, electrical etc.).

3.3 Operator Project Team

TBD (operator)

3.4 EDRS Steering Board (ESB)

In addition to the nominated Project Teams an EDRS Steering Board (ESB) will be established consisting of senior members of ESA and the Operator Management teams, as follows;

For ESA; Department Head for Telecommunications (Co-chair)

EDRS Project Manager.

EDRS Contracts Manager

For Operator; Chief Technical Officer (Co-Chair)

EDRS Programme Manager

Operator's EDRS Contracts Manager

In the case that the issues to be discussed at the ESB cannot find an agreement, the co-chair can opt to request the participation of their higher Management, for ESA the Director of Telecommunications and for the Operator the Chief Executive Officer.

If required the ESB will be supported by the EDRS industrial Contractor representatives at the appropriate level.

The ESB will maintain an overview of the implementation of the EDRS programme. It shall be convened every 3 months (TBC) to assess progress of the project and address issues that may affect the completion of the EDRS Programme in compliance with the agreed contractual baseline. The ESB shall also constitute the first point of recourse should issues arise in the implementation of the Programme which cannot be resolved at the Project Management level. In this latter case a special ESB will be convened at the earliest opportunity to ensure a rapid resolution of the issues in question.

Furthermore the ESB shall be convened to endorse the proceedings and conclusions of formal Project Reviews described in Chapter 7.

4 Meetings

4.1 General

ESA and the Operator will hold EDRS progress meetings at regular intervals (bi-monthly TBC) to discuss in detail all the various issues that pertain to the work included in the EDRS contractual baseline.

Besides, the Operator shall set up and maintain an EDRS Progress Meeting Plan to cover the EDRS contractual activities with the relevant industrial contractors, giving suitable notice to ESA so as to arrange efficient participation.

Formal meetings, including management meetings, will be arranged following agreement by both parties whenever required.

4.2 EDRS Progress Meetings (ESA/Operator)

Formal EDRS Progress Meetings will be scheduled every 2 months to review all aspects of the contract between ESA and Operator. These meetings will be scheduled to immediately follow the Progress meetings with the EDRS industrial Contractor(s). The EDRS Overall Progress Report shall be supplied by the Operator at least five working days prior to the agreed meeting date. The detailed agenda of the meeting will include but not be limited to, the following topics:

- EDRS status
 - review of technical, programmatic and/or contractual issues relating to ESA/Operator contractual frame
- EDRS Industrial Status :
 - Summary of industrial Progress, inclusive payload
 - critical issues and schedule drivers,
 - possible needs for customer intervention

The agenda may also include a dedicated management session to be attended by restricted members of the respective Project Teams to discuss topics as:

- Industrial Status :
 - critical issues and schedule drivers,
 - possible needs for customer intervention
- General Co-ordination between ESA and Operator activities:
 - meeting plans and participation,
 - evolution of elements related to co-ordinated schedule,
 - major action item status,
- Contractual:
 - status of contracts consolidation,

- need and responsibility for Contract Change action,
- NCR, RFD and RFW requests (affecting the contractual baseline).

Upon ESA request and with a five day notice, the Operator shall agree to hold dedicated Management Meetings or teleconference to address any of the topics mentioned in the paragraph above.

The tracking of action items between ESA and Operator will be performed by the Operator.

Participation to the EDRS Progress Meetings will involve:

- Operator EDRS Project Manager,
- ESA EDRS Project Manager,
- EDRS Deputy Project manager
- Key personnel from Operator Project Team
- Key personnel from ESA EDRS Project Team
- Operator and ESA project controllers,
- Operator and ESA contract officer

5 Project Reviews

5.1 General

During the implementation of EDRS activities a formal review process will be established to ensure a structured and coherent development of all elements that will constitute the EDRS System.

The Operator shall establish a review cycle to ensure that the EDRS contractual and technical baseline is flowed down to the appropriate level such that design and development activities can commence. By the same design process the Operator shall ensure and demonstrate that the performances of the agreed design meet the EDRS technical and contractual baseline.

It is anticipated that the EDRS System is broken down in the following elements:

- System (the combination of Space Segment and Ground Segment that shall satisfy the requirements of the EDRS Technical and Contractual Baseline)
- Spacecraft (EDRS-C and hosting satellites for EDRS-A/B)
- Payload (EDRS-A/B and payloads of EDRS-C)
- Equipment (Payload units and antennae)
- Ground Segment (EDRS specific elements)

For each EDRS System component under review, the relevant contractor will ensure timely availability and provision of the associated review deliverables on the media and quantities defined in the contractual baseline documentation.

5.2 Reviews roles and responsibilities

The formal reviews anticipated in the frame of the EDRS contract for each of the different system elements are defined in table 7.3.1

Review	Equipment	Payload	Satellite	Ground	System
System Requirement Review					X
Preliminary Design Review	X (1)	X	X	X	X
Equipment Qualification Status Review	X				
Critical Design Review	X	X	X	X	X
Delivery Review Board	X	X			
Flight Acceptance Review			X		
Operations Readiness Review					X
Launch Readiness Review			X		
In Orbit Acceptance Review			X		
Final Review					X
(1) Only for Equipment in category A,B (no qualification heritage)					

Table 7.3-1 EDRS Reviews

The Operator shall foresee that the chairmanship of the different reviews of Table 7.3-1 reflects the principles summarised in Table 7.3-2

EDRS Element	Equipment	Payload	Satellite	Ground	System
EDRS-A	Contractor(1)	ESA/Operator	Operator(3)	N.A.	N.A.
EDRS-B	Contractor(1)	ESA/Operator	Operator(3)	N.A.	N.A.
EDRS-C	Contractor(1)	ESA/Operator(2)	ESA/Operator	ESA/Operator	ESA
(1) ESA will be invited to attend and to submit comments (2) ESA will be observer for the Operator own payload (3) ESA will be observer with active role on EDRS-A/B payload interface issues					

Table 7.3-1 EDRS Reviews chairmanship

It shall be understood that the final acceptance of the satellite (in case of EDRS-C) and of the EDRS-A/B payloads will rest entirely with the Operator with the endorsement of ESA. Such endorsement shall be ratified in the context of the ESB.

With regards to the Ground Segment reviews and activities, The Operator shall foresee the involvement of ESA EDRS Project representatives in procurement activities of COTS components directly funded under the EDRS contractual baseline.

6 Contractual Baseline

6.1 EDRS Contractual Baseline (ECB)

The EDRS Contractual Baseline comprises those documents agreed to form part of the EDRS contract established between ESA and the Operator to which the Operator shall comply.

The documents are divided in two categories:

Category A

- Statement of Work (SOW)
- EDRS Project Management Plan
- Customer Furnished Items List (CFIL)
- Overall Hardware Matrix (including qualification status)
- EDRS master schedule
- EDRS Service Level Agreement for ESA Programmes

Category B

- EDRS System Requirements
- EDRS-A/B/C Specifications
- Design Verification and Compliance Matrix
- EDRS Design, Development and Verification Plan
- EDRS Product Assurance Plan
- Document Requirements List (DRL)

The documents listed in the Contractual baseline can only be modified (up-issued) through the Contract Change Notice (CCN) procedure.

All non-conformances (RFD's from Design Reviews or NCR's/RFW's from H/W acceptance tests) to Category A documents of the EDRS Contractual Baseline that arise in the course of the EDRS developments shall be formally notified to ESA in the form of a CCN by the Operator.

Irrespective of the level at which the non-conformance is generated (equipment, payload, satellite) the Operator shall clearly indicate in the CCN the affected element of the contractual baseline and provide the rationale to support the acceptance of the non conformance.

Conversely, if the identified non conformance affects any of the documents that are listed in Category B, the Operator shall formally notify the Agency in the form of an RFD or RFW, clearly indicating the affected EDRS contractual baseline requirement.

CCN's and RFD's/RFW's to the EDRS contractual baseline will be processed by the ESA Change Control Board.

7 Change Control

7.1 Contract Changes

A formal Change Control Procedure shall be used for the review (and approval) of any changes which impact the EDRS Contractual Baseline as well as updates of the documents listed in the DRL.

Changes can be initiated by ESA or the Operator, autonomously or in response to requests raised by EDRS industrial contractors.

Changes, in the form of CCN's, RFD's/RFW's and DCP's (see Chapter 10) are processed for approval by ESA Change Control Board.

7.2 General principles for the disposition of NCR's (RFW's)

All the major NCR's according to the definition of the EDRS PA Plan included in the contractual baseline shall be notified to the Agency within 24 hours from the occurrence. Such NCR's shall be processed with the involvement of ESA designated representatives unless explicitly stated otherwise.

For all the major NCR's that affect any of the contractual baseline documents, irrespective of the level they are generated at, the Operator shall obtain the explicit endorsement of ESA designated representative to the proposed close out, while the Operator will retain the full responsibility for the final acceptance of the affected item. Should a disagreement between ESA and the Operator originate on the disposition of a major NCR, the ESB shall be consulted for instructions.

The Operator shall also guarantee full visibility of all major NCR's that affect the Operator's own payload(s) (for EDRS-C) and the hosting platform (for EDRS-A/B) as well as direct ESA involvement if the NCR affects any of the performances that are part of the contractual baseline.

A full list of all NCRs, with associated dispositions (including RFW/RFDs), shall be provided to the Agency for information as part of the formal Progress Reporting.

8 Documentation Control and Exchange

8.1 Documentation Management

Document security & confidentiality – *each party (either ESA, the Operator or the Contractor(s)) will ensure that all documents generated or received during the life of this project will be stored on a secure server, Access to this server will be restricted to those persons specifically working on the project for the purpose of discharging their duties.*

Documentation access lists shall be approved by the respective Project managers and enforced by the responsible persons in the respective organisations.

Several levels of confidentiality maybe required, with certain documentation restricted to a restricted group of authorised project participants (eg commercial/financial documentation)

8.2 Documentation Exchange and Availability

Unless specific confidentiality or legal restrictions apply, all documents generated in the frame of the EDRS Programme shall be made available to the Agency.

Documentation generated by the EDRS industrial team (including subcontractors) will be provided directly by the originating Contractor.

All other relevant documentation shall be provided by the Operator.

8.3 Document Change Process

Those documents which constitute the EDRS Contractual Baseline (as described in section 7) shall be subject to strict Document Change Control.

The Operator shall ensure that the Contractual baseline documents' changes are fully traceable and that are clearly identifiable (e.g. sidelines in the document body) across the subsequent revisions.

Updates of the Contractual Baseline Documents (section 7.1) can only be introduced through a formal Contract Change Notice process (section 8.1).

For all the other EDRS documents defined in the Document Requirements List that require formal ESA approval, the Operator will raise a Document Change Proposal (DCP) (*or endorse a request from the EDRS Contractor*) clearly identifying the proposed document changes and the associated rationale. In case the proposed document update has any impacts on the contractual baseline, a separate CCN shall be issued.

These DCPs will then be subject to formal review and agreement by the Agency Change Control Board, before implementation.

9 Financial Arrangements

9.1 Financial Planning

In the frame of the EDRS Management meetings ESA and the Operator will regularly assess the progress of the programme, and the potential evolution of the associated milestone payments. As a minimum, on a quarterly basis, the Operator will provide a formal update to the predicted milestone payment plans indicating original assumption (at time of the contract kick-off) and revised prediction.

9.2 Milestone Invoicing and Invoice Approval

As described in Article 3 of Appendix 1 of the Contract (Financial Appendix) invoicing of milestones, requiring payment by the Agency, shall be via the EFIS system.

Clear evidence shall be provided (and documented) that the milestone has been achieved before ESA will release payment.

The ESA Programme Manager (or designated representative) will consult with the Operator Project Manager in the case where evidence of milestone achievement is deemed inadequate.

For milestones directly payable to the EDRS industrial contractor, by the Operator, the Operator shall inform ESA of all payments made and payments reflected in the financial reports.

For those elements co-funded by the Agency, the Operator shall inform the Agency if payments, for which the Operator is responsible, are to be withheld and/or substantially delayed.