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EARTHNET ERS-1

EECF
USER REQUEST FILES
INTERFACE SPECIFICATION

EUROPEAN SPACE AGENCY

EARTHNET PROGRAMME OFFICE

EARTHNET ERS-1 CENTRAL FACILITY

USER REQUEST FILES

INTERFACE SPECIFICATION

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AMENDMENT CONTROL

ISSUE	REV	DATE	PURPOSE	SECTION	ACTION
1	0	89/10/09	First Issue	All	New
1	1	89/11/08	**Added:**		
			User_Request_Status	2.1	Expanded
				2.4,A.3	New
			Revised:		
			Geographic Area Definition	2.2,A.1	Revised
			Validation_Result (added satellite/mission identifier)	2.3,A.2	Revised
			Default Values	3	Revised
			User_Request Validations	4.2	Revised
1	2	90/12/04	**Added:**		
			User Request processing details	2.2	Revised
			Validation error messages	A.5	Revised

TABLE OF CONTENTS

1 INTRODUCTION 1
1.1 SCOPE 1
1.2 OVERVIEW 1
1.3 APPLICABLE DOCUMENTS 2
2 DATA FLOWS 3
2.1 INTRODUCTION 3
2.2 USER_REQUEST 3
2.3 VALIDATION_RESULT 5
2.4 USER_REQUEST_STATUS 6
3 DEFAULT VALUES 8
4 VALIDATIONS 9
4.1 GENERAL VALIDATIONS 9
4.2 USER_REQUEST VALIDATIONS 9
. 9
. 9
ANNEX I: INTERFACE DATA FORMATS 1
1 USER_REQUEST 1
2 USER_REQUEST_STATUS 2
3 VALIDATION_RESULT 2

ACRONYMS AND ABBREVIATIONS

AMI	Active Microwave Instrument
ATSR	Along Track Scanning Radiometer and Microwave Sounder
CUS	Central User Service
EECF	Earthnet ERS-1 Central Facility
EPO	Earthnet Program Office
ERS	European Remote Sensing Satellite
ESA	European Space Agency
ESOC	European Space Operations Centre
ESRIN	European Space Research Institute
GAP	Global Activity Plan
ISS	Interface Sub-Set
PAF	Processing and Archiving Facility
RA	Radar Altimeter
SAR	Synthetic Aperture Radar
TBC	To Be Confirmed
TBD	To Be Defined

1 INTRODUCTION

1.1 SCOPE

This document specifies the interface through which files of data related to User Request for ERS-1 products or sensing activities will be exchanged between the Earthnet ERS-1 Central Facility (EECF) and the external entities.

The EECF systems involved in this data exchange are the Interface Subset (ISS), responsible for telecommunication aspects and preprocessing, and the Central User Service (CUS), where the functions of User Request Processing, Sensing Activity Planning and Catalogue Management reside.

Section 2 describes the data flows.

Section 3 describes the default values used for data flowing into EECF.

Section 4 lists the Validation criteria used at EECF.

Annex I shows all the interface data formats.

1.2 OVERVIEW

Users connected on-line to CUS will be able to fill in User Request forms permitting them to describe their requirements for ERS-1 products and/or sensing activities. Similarly the user will be able to obtain on-line information regarding the status of the submitted requests and their integration into the Global Activity Plan (GAP) of the ERS-1 satellite.

Some remote sensing centres will receive end user requirements and group them into coordinated user requests. These, when in computer readable form, can be periodically transmitted via file to EECF, instead of entering manually the information during an on-line session.

ISS will pre-process these User Requests, accepting or rejecting them according to the validation results. Information on valid and invalid User Requests (together with error information in case of the invalid ones) will be re-transmitted back to the originator in another file. During the pre-processing, ISS will use default values for all those fields where no value was specified.

The mechanism described in this document is aimed at simplifying the exchange of bulk information related to User Requests. It does not replace all the manual tools available on-line through CUS. For example the User Requests can be sent as a file and, after their validation and ingestion into CUS, it

will be possible to log-on into CUS to verify their status, or even to manually edit or delete them, if so permitted by the system.

1.3 APPLICABLE DOCUMENTS

A-1	ER-IS-EPO-GE-0108	Earthnet ERS-1 Central Facility File Transfer
A-2	ER-IS-EPO-GU-0101	ERS-1 Central User Service Data Structures

2 DATA FLOWS

2.1 INTRODUCTION

This interface describes the following data flows:

a) **-User_Request:**
a file flowing towards EECF and containing the User Requests;

b) **-Validation_Result:**
a file leaving EECF and containing the list of accepted and rejected User Requests, together with the related error information, if any.

c) **-User_Request_Status:**
a file generated periodically at EECF and containing the current status or the User Requests of specific coordinating centres.

Files a), b) and c) shall adhere to the standard EECF file structure described in document A-1 (Monitor and Control Files) and shall not have a variable_portion.

The following sections describe the layout of all the files.

2.2 USER_REQUEST

This file shall contain one User Request in each application_data_record. The file layout shall be:

- Fixed Portion:
  - . File identifier = 'RQUS_'
  - . Generation Date (YYMMDD)
  - . Originator = NFS identifier
  - . Destination = 'CF'
  - . Cyclic Counter
  - . Separator = '.'
  - . Satellite ID = 'E1'
  - . Generation Time (HH:MM:SS)
- Variable Portion (not used)
- Application Data Record (no_of_user_requests times):
  - . User Request Header
    - * User Specified Reference
    - * User Identifier
    - * Target Delivery Date (optional and for single orders only)
    - * Application Field
    - * Application Type
  - . User Request Details
    - * Satellite Identifier

* Sensing Only Flag
* Product/Sensor Information (4 times)
  - Sensor
  - Sensor Mode
  - Maximum Number of Frames per Observation (optional)
  - Product1 Type (optional)
  - Product1 Medium (optional)
  - Product2 Type (optional)
  - Product2 Medium (optional)
  - Product3 Type (optional)
  - Product3 Medium (optional)
* Geographic Area Name
* Geographic Area Definition
  - Number of Lat/Long Points
  - Corner Coordinates (20 coordinate pairs)
* Coverage Type
* Number of Observations
* Start Date and Time of Interest (first observation)
* End Date and Time of Interest (first observation)
* Number of Days Between Observations
* Pass Type
* Specific Ordering Parameters (optional)
* Comments (optional)

Since cross correlation between User Requests and validation results (see next section) can only be performed through the User Specified Reference, this field shall always be present in the User Requests transmitted via file.

The User Identifier shall be one of those assigned by EECF to the coordinating centre. Each User Identifier is univocally linked within CUS to one of the following Application Categories:

AO = Announcement of Opportunity
ES = ESA
EO = EOPAG
LO = ESA, Low Bit Rate Default Operations
NA = National
FO = Foreign
PP = Pilot Project
CA = Campaign
RU = Recognised User
PL = Planning
CV = Calibration/Validation

The Sensing Only Flag shall be used to distinguish between requests for products (and therefore needing also sensing activities) from the ones requiring sensing activities only.

It will be possible to specify up to 4 different sensor operations in one request and up to 3 different product types and media for each sensor (in total up to 12 products per User

Request). For each sensor it will be possible to define the maximum number of standard frames which will satisfy the request (the area and time windows might permit much more acquisitions).

The area shall be specified through the Geographic Area Name and the polygon Corner Coordinates. For any User Request all the elements of the area shall be specified (CUS will link these elements to the User Request for the whole User Request life time). This is necessary in order to ensure that the area definition is not changed during any of the CUS processing states.

It will not be possible to define circular areas. Only polygonal areas can be described through this interface.

The Corner Coordinates shall be entered in a clockwise ordered sequence, with the defined area always at the right of the line connecting two adjacent vertices. The polygon description shall be completed by one additional Coordinate, identical to the first one, in order to close the polygon.

When the Number of Observations is greater than 1, the user is submitting a standing request, that is a request repeated over time.

In preparing the User Request file the following considerations should be taken into account:

- in order to ensure planning at MMCC of a least a part of a long segment, CUS will split segments longer than a system parameter (nominally 2 to 3 minutes) into roughly equal portions just smaller than the system parameter value (each resulting segment may or maybe not planned, independently from the other ones);
- different user identifiers (X_USER_ID) should be used in case requests have different priorities (each user identifier is associated within CUS to one priority value);
- Sensor Mode will be ignored in CUS planning (simplification introduced with the latest CUS version): it will be possible to request specific sensor modes for certain User Requests only to the CUS Order Desk (filling in the Remarks field or getting directly in touch with him);
- in order to improve system performance it is recommended to use for the Geograophic Area Definition only simple concave polygons.

2.3 VALIDATION_RESULT

This file shall be generated at ISS as result of the User Requests' validation process. There shall be a one to one correspondence between User_Request and Validation_Result files. That is, ISS shall generate one Validation_Result file for each received User_Request file, even in the case where all requests

are valid. In such a case the Validation_Result file shall contain only records showing acceptance of requests, without any error information.

The file layout shall be:

- Fixed Portion:
  - File identifier = 'RQVR_'
  - Generation Date (YYMMDD)
  - Originator = 'CF'
  - Destination = NFS identifier
  - Cyclic Counter
  - Separator = '.'
  - Satellite ID = 'E1'
  - Generation Time (HH:MM:SS)
- Variable Portion (not used)
- Application Data Record (valid_requests+total_errors times):
  - Satellite/Mission Identifier
  - User Specified Reference
  - Validation Result Flag
  - Error Information
    - * Field Name
    - * Field Value
    - * Error Code

For each valid User Request one application_data_record containing the User Specified Reference will be present into the file, with positive indication in the Validation Result Flag. In this case, the Error Information fields will be blank.

For each invalid User Requests, one application_data_record for each detected error will be present into the Validation_Result file. Therefore, in case of error, as many records as errors will be present for each User Request. The User Specified Reference will be identical for all the records associated with the same User Request. The Validation Result Flag will indicate unsuccessful validation. The Field Name will identify the field in error and will be the copy of the column NAMES in the USER_REQUEST data format (see Annex I). The Field Value will feed back the leading characters of the field in error, in order to resolve ambiguities in case of repeating fields. The Error Code will indicate the nature of the error. The list of the error codes and their meanings is TBD.

2.4 USER_REQUEST_STATUS

This file shall be generated daily at ISS for each coordinating centre from which User_Request files are expected. This file shall contain the status of all the User Requests originated at

one of the above centres and currently into CUS. In case no User Request exists within CUS for one centre, the related file shall not be generated.

The file layout shall be:

- Fixed Portion:
  . File identifier = 'RQST_'
  . Generation Date (YYMMDD)
  . Originator = 'CF'
  . Destination = NFS identifier
  . Cyclic Counter
  . Separator = '.'
  . Satellite ID = 'E1'
  . Generation Time (HH:MM:SS)
- Variable Portion (not used)
- Application Data Record (CUS_requests times):
  . Satellite/Mission Identifier
  . User Specified Reference
  . User Request Status
  . Sensing Activity Information:
    * Sensing Order Identifier
    * Sensor
    * Sensor Mode
    * Sensing Order Status
    * Absolute Orbit Number (from mission start)
    * Sensing Start Time (relative to ascending node)
    * Sensing End Time (relative to ascending node)

The User Request Status defines the current condition of the User Request. Some of the states are not linked to planning of sensing activities and some are. The Sensing Activity Information is left blank in the first case and filled in in the second one. There will be only one Application Data Record in the first case and one or more in the second one (in this case the file will contain for each User Request as many records as planned sensing segments).

The Sensing Order is a CUS internal structure. The Sensing Order Identifier is the corresponding CUS internal identifier, which is also displayed during online sessions.

The Sensing Order Status is specific for each sensing order. That is, the same User Request can cause the generation of different Sensing Orders and each one can be in a specific status independently from the other ones.

3 DEFAULT VALUES

The fillers for the fields are as specified in document A-2 (overview).

The following default values will be used at EECF when no value is provided in the fields of the User_Request file:

FIELD	DEFAULT VALUE
Satellite Identifier	E1
Maximum Number of Frames per Observation	1

4 VALIDATIONS

4.1 GENERAL VALIDATIONS

For all the data flowing into EECF, each field will be verified to ensure that the values provided:

a)-exist in all non optional fields;
b)-are of the expected type;
c)-fall within the expected range or have one of the permitted discrete values.

4.2 USER_REQUEST VALIDATIONS

Each User_Request file will be validated according to the following criteria:

a)-User Identifier validity;
b)-For Sensing Only requests, no Product Type or Medium must be provided;
c)-If more than one sensor entered in the same User Request, they all must be different;
d)-Sensor Mode against Sensor;
e)-Product Type against Sensor;
f)-Product Type different from all the other Product Types for the same Sensor;
g)-For Fast Delivery Product Types, User must have a telecommunication address;
h)-Product Medium against Product Type;
i)-Dates and Times of interest do not cross a phase change boundary;
l)-End Date and Time of Interest greater than Start Date and Time of Interest;
m)-Number of Days Between Observations greater than the difference between End and Start Dates of Interest;
n)-Target Delivery Date greater than End Date of Interest;
o)-For standing requests, the last observation window must be fully contained in the same mission phase where the first observation starts.

No check will be performed on the Specific Ordering Parameters or Comments fields. The first one will be just copied over into the Product Order directed to the Processing and Archiving Facilities (PAFs). Therefore it is important to follow the suggested way of coding the information, in order to permit its correct decoding at the PAFs.

ANNEX I: INTERFACE DATA FORMATS

1 **USER_REQUEST**

NO.	NAME	OFFST	LENGTH	TIMES	T	DESCRIPTION
			600			*** TOTAL BYTES
1.0	I_USER_REFERENCE	0	8		A	User Specified Reference
2.0	X_USER_ID	8	8			User Identifier
3.0	X_DATE	16	8			Target Delivery Date (optional and for single orders only)
4.0	I_APPLICATION_FIELD	24	2		A	Application Field CL = CAL/VAL CM = Commercial DM = Demonstration RS = Research SR = Service/Operations
5.0	I_APPLICATION_TYPE	26	2		A	Application Type AG = Application: Geodesy AH = Application: Hydrology AM = Application: Meteorology AO = Application: Others AR = Application: Ship Routing AS = Application: Sensor MF = Mapping: Forestry MI = Mapping: Ice ML = Mapping: Land OG = Oceanography: global OR = Oceanography: regional SA = Surveillance: Agriculture SF = Surveillance: Forestry SI = Surveillance: Ice SS = Surveillance: Ship Traffic
6.0		28	5			Reserved
7.0	X_SATELLITE_ID	33	2			Satellite Identifier
8.0	I_SENSING_ONLY_FLAG	35	1		A	Sensing Only Flag Y = Yes: sensing only N = No: products required as well
9.0		36	31	4		PRODUCT/SENSOR INFORMATION:
9.1	X_SENSOR_ID	36	3			Sensor
9.2	X_SENSOR_MODE	39	3			Sensor Mode
9.3	I_MAX_FRAME_NO	42	4		N	Maximum Number of Frames per Observation (optional)
9.4	X_PRODUCT_TYPE	46	5			Product1 Type
9.5	X_MEDIUM_TYPE	51	2			Product1 Medium
9.6	X_PRODUCT_TYPE	53	5			Product2 Type
9.7	X_MEDIUM_TYPE	58	2			Product2 Medium
9.8	X_PRODUCT_TYPE	60	5			Product3 Type
9.9	X_MEDIUM_TYPE	65	2			Product3 Medium
10.0	I_AREA_NAME	160	28		A	Geographic Area Name
11.0		188	8			Reserved
12.0	I_VERTICES_NO	196	2		N	Number of Lat/Long Points
13.0	X_LAT_LONG	198	12	20		Corner Coordinates (Lat/Long)
14.0	I_COVERAGE_TYPE	438	1		A	Coverage Type (for future expansion) I = Ice L = Land M = Mixed

					S = Sea
15.0	I_OBSERVATION_NO	439	2	N	Number of Observations (>1 = Standing Request)
16.0		441	3		Reserved
17.0	X_DATE_TIME	444	14		Start Date and Time of Interest (first observation)
18.0	X_DATE_TIME	458	14		End Date and Time of Interest (first observation)
19.0	I_INTERVAL_SIZE	472	4	N	Number of Days Between Observations
20.0	X_PASS_TYPE	476	1		Pass Type
21.0		477	3		Reserved
22.0	X_SPEC_ORDER_PARMS	480	60	A	Specific Ordering Parameters (optional)
23.0	I_COMMENTS	540	60	A	Comments (optional)
					(format: keyword1=value1,keyword2=value2,... and/or text)
					PY=N (original user request priority, from 1 to 5)

2 **USER_REQUEST_STATUS**

NO.	NAME	OFFST	LENGTH	TIMES	T	DESCRIPTION
			56			*** TOTAL BYTES
1.0	X_SATELLITE_ID	0	2			Satellite/Mission Identifier
2.0		2	8		A	User Specified Reference
3.0		10	2		N	User Request Status *
						00 = Pending
						01 = Submitted
						02 = Awaiting_Planning
						03 = Partially_Planned
						04 = Planned
						05 = Awaiting_Production
						06 = In_Production
						07 = Completed
						08 = Cancelled
						09 = Rejected
4.0		12	3			Reserved
5.0		15	41			SENSING ACTIVITY INFORMATION:
5.1		15	8		N	Sensing Order Identifier
5.2	X_SENSOR_ID	23	3			Sensor
5.3	X_SENSOR_MODE	26	3			Sensor Mode
5.4		29	2		N	Sensing Order Status *
						00 = Assigned
						01 = Deleted
						02 = Partially_Assigned
						03 = Pending
5.5	X_ORBIT_NO	31	5			Absolute Orbit Number
5.6	X_RELATIVE_TIME	36	10			Sensing Start Time (relative to ascending node)
5.7	X_RELATIVE_TIME	46	10			Sensing End Time (relative to ascending node)

* Please note that the numeric codes assigned to the various states
are temporary ones. The final values will be communicated when fixed.

3 **VALIDATION_RESULT**

NO.	NAME	OFFST	LENGTH	TIMES	T	DESCRIPTION
			72			*** TOTAL BYTES
1.0	X_SATELLITE_ID	0	2			Satellite/Mission Identifier
2.0		2	8		A	User Specified Reference
3.0		10	1		A	Validation Result Flag
						A = Accepted
						R = Rejected
4.0		11	5			Reserved
5.0		16	56			ERROR INFORMATION:
5.1		16	24		A	Field Name (name of field in USER_REQUEST)
5.2		40	24		A	Field Value (value provided in USER_REQUEST)
5.3		64	8		A	Error Code

List of possible combinations of:

FIELD_NAME	FIELD_VALUE	ERROR_CODE
USER_REFERENCE	Invalid data type	URAF0000
USER_ID	Value not permitted	URAF0001
DATE	Invalid date format	URAF0002
APPLICATION_FIELD	Invalid data format	URAF0003
APPLICATION_FIELD	Invalid field value	URAF0004
APPLICATION_TYPE	Invalid data format	URAF0005
APPLICATION_TYPE	Invalid field value	URAF0006
APPLICATION_FILED/TYPE	Invalid field/type comb.	URAF0007
SATELLITE_ID	Invalid field value	URAF0008
SENSING_ONLY_FLAG	Invalid field value	URAF0009
SENSOR_ID	Invalid input format	URAF0010
SENSOR_ID	Invalid field value	URAF0011
SENSOR_MODE	Invalid input format	URAF0012
MAX_FRAME_NO	Invalid input format	URAF0013
MAX_FRAME_NO	Invalid field value	URAF0014
PRODUCT_TYPE	Invalid input format	URAF0015
PRODUCT_TYPE	Invalid field value	URAF0016
PRODUCT_TYPE	Invalid prod/sensor comb	URAF0017
MEDIUM_TYPE	Invalid input format	URAF0018
MEDIUM_TYPE	Invalid field value	URAF0019
MEDIUM_TYPE	Invalid prod/medium comb	URAF0020
AREA_NAME	Invalid input format	URAF0021
VERTICES_NO	Too many vertices	URAF0022
VERTICES_NO	Invalid input format	URAF0023
LAT_LONG	Missing latitude value	URAF0024
LAT_LONG	Missing longitude value	URAF0025
LAT_LONG	Invalid field value	URAF0026
LAT_LONG/LAT_LONG	Vertices sequence error	URAF0027
COVERAGE_TYPE	Invalid input format	URAF0028
COVERAGE_TYPE	Invalid field value	URAF0029
OBSERVATION_NO	Invalid input format	URAF0030
DATE_TIME	Invalid date	URAF0031
DATE_TIME	Invalid date	URAF0032
DATE_TIME/DATE_TIME	Inv.inter.start/end date	URAF0033
INTERVAL_SIZE	Invalid field value	URAF0034
PASS_TYPE	Invalid input format	URAF0035
PASS_TYPE	Invalid field value	URAF0036
DATE_TIME	Invalid date	URAF0037

DATE_TIME	Invalid window size	URAF0038
PRODUCT_TYPE/SENSOR_ID	Invalid prod/sensor comb	URAF0039
SENSOR_MODE	Invalid field value	URAF0040
DATE_TIME	Dates outside phase	URAF0041
PRODUCT_TYPE/PRODUCT_	Identical prod. request	URAF0042
SENSOR_TYPE/SENSOR_	Identical sensor request	URAF0043
SENSING_ONLY_FLAG	Value not permitted	URAF0044
PRODUCT_TYPE/FDP	No comm. address for FDP	URAF0045