

EUROLAS Data Center (EDC) – Improvements of the EDC-Website for the ILRS-Community

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Abstract. *This paper introduces new developed tools and features of the EUROLAS Data Center (EDC) website. The new tools are the online CRD-check, online CPF-check, user-defined CPF-Mailer, new management of SLR mailing lists archives, and the EDC-API.*

Introduction

The DGFI is working as ILRS Data Center since 1994. On 2011-11-15, the EDC-website was launched and is accessible under <http://edc.dgfi.badw.de> (Schwatke, 2012).

The following list shows the current features of the EDC-Website:

- information about submitted SLR data (normal point data, full-rate data), predictions and products
- management of data sets in CRD, CPF, CSTG and MERIT-II format
- detailed information about all stations and satellites
- tracking of the EDC data flow and the current status of their submitted data by stations
- information about each submitted data set can be retrieved
- information on how the Operation Center (OC) checks all submitted data sets are available

New developments concerning the EDC-Website are introduced in the next chapters.

Online CRD-Check

The EDC as Operation Center (OC) has the task to check all incoming normal point data and full-rate data in CRD format for errors. Now the sample program for checking CRD data is available online on the EDC-Website.

This new tools allows user after registration on the EDC-Website to upload CRD data for checking. After checking the data a detailed report is displayed. In the case that errors are found the errors are explained.

The main target groups for this application are station managers of new stations who want to submit their first CRD data and existing stations after software updates.

Record	Error/Warning
1	H1 CRD 1 2013 11 4 0
2	H2 CHAL 7237 19 01 4
3	H3 glonass106 705501 9106 32275 0 1
4	H4 1 2013 11 3 20 20 14 2013 11 3 20 24 33 0 0 0 0 1 0 2 0 EH3002 - Target name, Satellite ID and SIC ID are not from the same satellite.
5	C0 0 532.000 STD CL1 CD1 CT1
6	C1 0 CL1 RG30-L 1064.00 1000.00 1.50 10.0 92.82 0
7	C2 0 CD1 CSPAD 532.000 20.00 5.0 60.0 TTL 0.0 1.70 0.0 0.0 none
8	C3 0 CT1 Meridian Meridian ET-A033 na 0.0
9	60 std 6 1
10	40 73620.000000000000 0 std 3778 2871 3.699 179682.0 0.0 65.4 0.000 0.000 0.0 2 0 0
11	20 73476.000000000000 993.10 274.40 92. 0 EH3031 - Satellite Id was not found.
12	11 73354.858000994951 0.130773626435 std 2 300.0 326 126.1 0.101 -0.378 297.5 0.0 0
13	50 std 125.0 0.119 -0.376 298.3 0
14	H8
15	H9
16	

Figure 1: Tool for checking CRD on the EDC-website

Online CPF-Check

Since the introduction of the new “Consolidated Laser Ranging prediction Format” (CPF) in June 2008 the Operation Centers have the task to check submitted CPF data for format errors.

The new tool for checking CPF data on the EDC-Website enables prediction providers who updated their software or create predictions for new satellite to check the data for format errors before sending them to the data centers.

Users can upload their CPF data after registering on the EDC-website following the same principle as for the CRD-check.

Select CPF file

Filename:

Uploading and Checking CPF file ...

There were 2 errors found.

Record specific error(s)/warning(s):

1	H1	CPF	1	ESA	2013	11	2	9	8061	galileo104											
2	H2	1203502	7104	38858	2013	13	2	0	0	2013	11	7	0	0	0	900	1	1	0	0	0
EH2021 - Satellite id is not valid.																					
EH2061 - Starting Month is not valid.																					
3	H9																				
4	10	0	56598	0.000000	0	972746.765	-16892587.062	24285116.794													
5	10	0	56598	900.000000	0	3155141.706	-16683864.230	24243782.299													
6	10	0	56598	1800.000000	0	5329383.391	-16625531.492	23900898.922													
7	10	0	56598	2700.000000	0	7458187.263	-16714539.785	23260727.748													
8	10	0	56598	3600.000000	0	9505434.749	-16941814.638	22331227.034													
9	10	0	56598	4500.000000	0	11437239.968	-17292553.536	21123953.667													
10	10	0	56598	5400.000000	0	13222947.316	-17746705.672	19653919.906													
11	10	0	56598	6300.000000	0	14836028.822	-18279619.058	17939407.142													
12	10	0	56598	7200.000000	0	16254853.282	-18862834.718	16001738.911													
13	10	0	56598	8100.000000	0	17463303.175	-19465003.067	13865015.941													

Figure 2: Tool for checking CPF on the EDC-website

User-defined CPF-Mailer

The user-defined CPF-Mailer is new tool to for the distribution of prediction CPF via web interface. Recipients of the CPF-mailer will receive the latest predictions submitted to the EDC.

The user-defined CPF-mailer enables users to configure the CPF-mailer individually by selecting CPF predictions by satellite or prediction provider.

An obsolete system maintained by the EDC will be migrated to the new user-defined CPF-mailer. All recipients of the former CPF-mailer will be requested in the near future to register for the new user-defined CPF-mailer.

Providers:

<input type="checkbox"/> AAS	<input type="checkbox"/> CAS	<input type="checkbox"/> CNE	<input type="checkbox"/> COD	<input checked="" type="checkbox"/> DLR
<input checked="" type="checkbox"/> ESA	<input type="checkbox"/> GAL	<input checked="" type="checkbox"/> GFZ	<input type="checkbox"/> GSF	<input checked="" type="checkbox"/> HTS
<input type="checkbox"/> IAM	<input type="checkbox"/> ISR	<input type="checkbox"/> IST	<input type="checkbox"/> JAX	<input type="checkbox"/> KAI
<input type="checkbox"/> KGS	<input type="checkbox"/> MCC	<input type="checkbox"/> NER	<input type="checkbox"/> NRL	<input type="checkbox"/> SGF
<input type="checkbox"/> SHA	<input type="checkbox"/> STP	<input type="checkbox"/> UTX		

Satellite Missions:

<input type="checkbox"/> aces	<input type="checkbox"/> adeos	<input type="checkbox"/> adeos2	<input type="checkbox"/> ajisai	<input type="checkbox"/> alos
<input type="checkbox"/> andec	<input type="checkbox"/> andep	<input type="checkbox"/> anderra	<input type="checkbox"/> anderrp	<input type="checkbox"/> apollo11
<input type="checkbox"/> apollo14	<input type="checkbox"/> apollo15	<input checked="" type="checkbox"/> beaconc	<input checked="" type="checkbox"/> bits	<input type="checkbox"/> champ
<input type="checkbox"/> compassg1	<input type="checkbox"/> compassi3	<input type="checkbox"/> compassi4	<input type="checkbox"/> compassi5	<input type="checkbox"/> compassm1
<input type="checkbox"/> compassm3	<input type="checkbox"/> cryosat2	<input type="checkbox"/> diademe1c	<input type="checkbox"/> diademe1d	<input type="checkbox"/> envisat
<input type="checkbox"/> ers1	<input type="checkbox"/> ers2	<input type="checkbox"/> etalon1	<input type="checkbox"/> etalon2	<input type="checkbox"/> ets8
<input type="checkbox"/> fizeau	<input type="checkbox"/> galileo101	<input checked="" type="checkbox"/> galileo102	<input type="checkbox"/> galileo103	<input type="checkbox"/> galileo104
<input type="checkbox"/> geos3	<input type="checkbox"/> gfo1	<input type="checkbox"/> gfz1	<input type="checkbox"/> giovea	<input type="checkbox"/> gioveb
<input type="checkbox"/> glonass100	<input type="checkbox"/> glonass101	<input type="checkbox"/> glonass102	<input type="checkbox"/> glonass103	<input type="checkbox"/> glonass104
<input type="checkbox"/> glonass105	<input type="checkbox"/> glonass106	<input type="checkbox"/> glonass107	<input type="checkbox"/> glonass108	<input type="checkbox"/> glonass109
<input type="checkbox"/> glonass110	<input type="checkbox"/> glonass111	<input type="checkbox"/> glonass112	<input type="checkbox"/> glonass113	<input type="checkbox"/> glonass114

Figure 3: User-defined CPF-Mailer Configuration on the EDC-website

Management of the archive of SLR mailing lists

At the moment the ILRS maintains four mailing lists. The archives of the SLR-Mail and SLR-Report were stored on FTP only. The archives are now stored in a database additionally which allows users to access the archive also via EDC-website. Furthermore a search function was developed which allows visitors of the website to search in the archive using different search criteria (mail no., date, sender, subject, author and content).

EDC-API

A new development of the EDC is the “EUROLAS Data Center - Application Programming Interface” (EDC-API). It allows users to access the EDC data holding by using their own programs via socket connections. The connection to the EDC server is established to the address `edc.dgfi.badw.de` using port 9123. The data format for sending requests and responses is based on JSON (JavaScript Object Notation) objects which allow users to communicate using programs written in different languages (Python, C, C++, Java, PHP, etc.). Users can send queries to search in the EDC data holding which are converted to MySQL queries internally (Schwatke, 2013). The responses by the server are arrays of user-defined database listings.

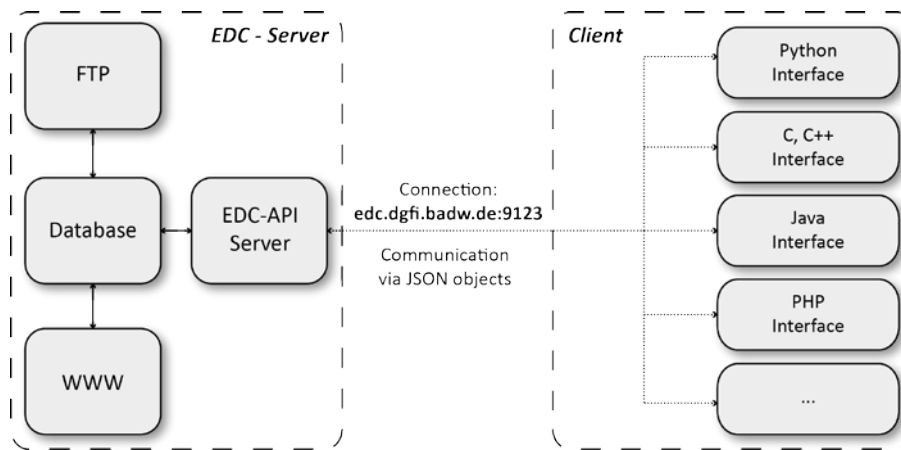


Figure 4: Flow chart of the EDC-API communication between the client and EDC-server

The communication between client and server using EDC-API is realized by two steps. The first is the authentication step which allows the client to send a database query. This is realized by sending an API-key which is available after registration on the EDC website. Only a successful authentication enables users to send a database query which will be executed by the EDC-API server.

After successful authentication a database request containing parameters for the database selection (e.g. data type, output parameters, constraints for the selection, etc.) can be sent to the server. The database response contains an array with all datasets returned by the database selection.

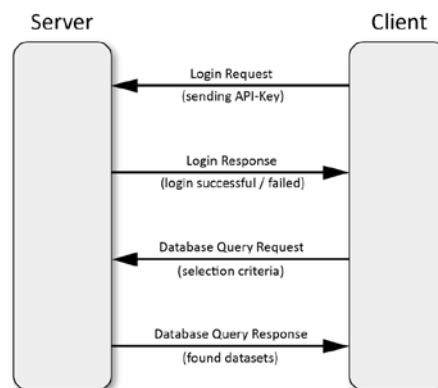


Figure 5: Communication of sending request and responses between client and server

A first application developed using the EDC-API is the “Station Monitor” which lists the latest submitted data sets of a certain station and updates itself automatically. This program written in Python can be downloaded from the EDC-Website. The Source code (Python) of this program can be modified easily for other applications.

Incoming Date	Station	Satellite	Start Data Date	End Data Date	Status
2013-11-03 04:10:52	70802419	7501001	2013-11-03 00:38:10	2013-11-03 00:39:19	valid
2013-11-03 03:11:12	70802419	1104301	2013-11-03 00:17:18	2013-11-03 00:20:07	valid
2013-11-03 03:11:12	70802419	8606101	2013-11-02 23:38:36	2013-11-02 23:46:03	valid
2013-11-03 01:10:12	70802419	1107101	2013-11-02 22:18:37	2013-11-02 22:23:36	valid
2013-11-03 00:10:51	70802419	1200601	2013-11-02 20:58:55	2013-11-02 21:02:48	valid
2013-11-03 00:10:51	70802419	7603901	2013-11-02 20:47:24	2013-11-02 20:52:15	valid
2013-11-02 21:10:11	70802419	7603901	2013-11-02 17:24:48	2013-11-02 17:29:41	valid
2013-11-01 04:10:37	70802419	0304206	2013-11-01 00:28:50	2013-11-01 00:29:49	valid
2013-11-01 03:10:22	70802419	8606101	2013-10-31 23:28:16	2013-10-31 23:31:02	valid
2013-11-01 02:10:21	70802419	1200601	2013-10-31 23:06:41	2013-10-31 23:09:20	valid
2013-11-01 00:11:17	70802419	1106002	2013-10-31 21:15:31	2013-10-31 21:25:12	valid
2013-11-01 00:11:17	70802419	1200601	2013-10-31 21:09:13	2013-10-31 21:10:23	valid
2013-10-31 23:10:36	70802419	7603901	2013-10-31 19:56:00	2013-10-31 20:01:26	valid
2013-10-31 23:10:36	70802419	9306102	2013-10-31 19:29:48	2013-10-31 19:30:08	valid
2013-10-30 16:14:32	70802419	8503201	2013-10-30 03:49:45	2013-10-30 03:56:40	valid
2013-10-30 16:14:32	70802419	8606101	2013-10-30 03:13:45	2013-10-30 03:21:36	valid
2013-10-30 16:14:32	70802419	7501001	2013-10-30 02:56:27	2013-10-30 03:01:32	valid
2013-10-30 16:14:32	70802419	8503201	2013-10-30 01:58:13	2013-10-30 02:01:45	valid
2013-10-30 16:14:32	70802419	9207002	2013-10-30 01:04:23	2013-10-30 01:36:36	valid
2013-10-30 16:14:32	70802419	9207002	2013-10-27 02:33:22	2013-10-27 03:16:50	valid

Figure 6: Station monitor for Mt.Stromlo

References

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