Internal Memo

Title: Design specifications for linking the general QC interface to the QC1 database

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To: **DFO team**
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Purpose: **Requirements for linking the general QC interface to the QC1 database**

Change record:

version 1.0	2003-02-17

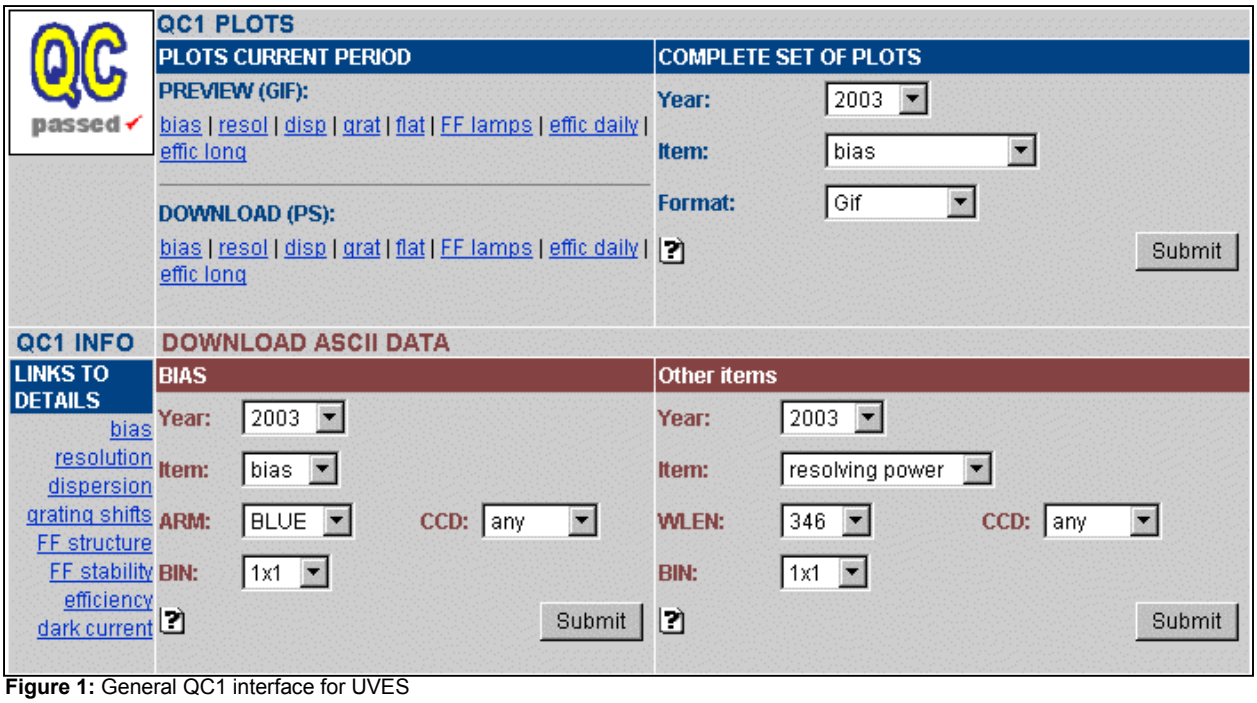

Figure 1: General QC1 interface for UVES

1 Purpose

This document describes the way how the existing QC interface for downloading trending information can be connected to the QC1 database.

The Quality Control QC1 and trending interfaces are found, per instrument, under http://www.eso.org/qc/<INSTR>/qc/qc1.html where INSTR is any of the supported instruments.

They have two modes:

- an expert-user mode,
- a general-purpose mode.

Expert-user. The expert-user part is the `qc1Browser` and `qc1Plotter` interface, offering full access to the content of the QC1 database.

General-purpose. The general-purpose, public part is what is shown in Figure 1. It has two branches, one for downloading trending plots (upper part, guide colour is blue), one for downloading trending information (bottom part, guide colour is brown). The trending plots are pre-manufactured by DFO scripts. The download option presently connects to trending tables which are maintained by DFO.

They should be replaced by a link to the QC1 database tables. The purpose of this proposal is to define the specifications for that link.

The replacement should be completely transparent for the user. It is the scope of the general-purpose part of the QC1 interface that we provide data from the user's point of view, which is more high-level than the technical 'expert-user' mode.

Data are presented, and can be selected, as QC items. Rather than connecting to 'uves_wave', we offer 'resolution' or 'dispersion' information. Following the same philosophy, we download not the whole table content, but just those keys which are relevant from the user's perspective.

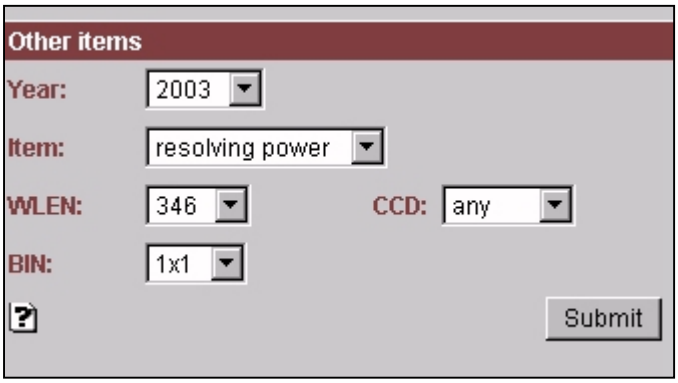

Figure 2: General-purpose interface, detail.

2 Additional items needed

The required items basically are:

- a cgi script which retrieves information from the qc1 database (using SQL commands),
- a form which transfers user input from the web interface to the script,
- a configuration file which specifies all instrument specific information.

The cgi script and the form are for general purpose, i.e. there is one cgi script and one form for all instruments. Within this document, the script will be called `qc1_general`.

The form will read the user interface parameter selection and transfer it to `qc1_general`. The main task of that script is then to read the database definition tables and find the QC1 items to be displayed. These will be passed to the existing `qc1_browser` script for database retrieval.

The format of the output will be the same as from `qc1_browser`.

3 Form

The QC1 general-purpose interface has three sections (Figure 2):

- the list field "year"
- the list field "item"
- the filter section with user-selectable values for the most relevant instrument keys (WLEN, CCD, BIN in Figure 2).

3.1 Year

This list field is the logical equivalent of the "from"/"to" fields of the QC1 interface. It needs to be translated into the "from"/"to" fields by the `qc1_general` script. Its content is controlled by the general-purpose interface and is not part of the specifications

3.2 Item

This list field translates the user-offered qc1 items into the technical database names. This translation is done within the general-purpose interface and is not part of the specifications.

3.3 Filters

The interface offers filtering for the most relevant instrument keys. Within the framework of association, the set of those keys defines a basic data set. For the QC1 database, these keys define, together with MJD-OBS, the primary key of the related QC1 table.

The selection of these keys, and the options offered, are responsibility of DFO. But a clear business rule is that they should correspond, one to one, to the keywords with `key_word_type` = "INS" and `plot_flag` = "f". This means the set of keys is identical to the one coded in red, and selected by default, in the qc1_browser interface.

The `qc1_general` script is required to know these keys and interpret their values passed by the form properly.

4 qc1_general

The functionalities of the new cgi script `qc1_general` are the following:

- translate the item "year" into the `qc1_browser` items "from"/"to"
- read database definition tables to find the keys to be displayed
- set the output option to "ascii"
- interpret the filter options (if not done by `qc1_browser`; needed anyway!)

The modified set of parameters is then passed to `qc1_browser` which provides the QC1 database queries in the existing way.

4.1 Year

The rule for translating "year" into "from"/"to" is:

- "from" = "year"-01-01
- "to" = "year"-31-12

4.2 Keys to be displayed

The general-purpose interface displays only a subsection of the QC1 database entries. It focuses on the QC1 related entries while suppressing the more technical content.

We need an additional database definition table to define, per QC1 item, the keys to be displayed. This list has to be read by `qc1_general` and passed to `qc1_browse`.

5 Database table definition file

The additional definition file lists all keys for display per QC1 item. The example for the UVES case is found in Table 1. Civil_date should always be displayed since it is crucial for human-readibility. The other keys have mostly keyword_type "qc1" or "ins".

6 User interface

In this section, the modifications to the existing general QC1 interface are described. These modifications are completely responsibility of DFO and are listed here only to provide a complete overview of the whole concept.

The following parts of the existing interface need to be modified:

- the name of the form action (has to become "`qc1_general`")
- the translation of QC1 items into database table names
- the set of instrument keys used for filtering.

An example for the translation needed is given in Table 2. The column "future value" lists the database table name. The column "present value" is listed for completeness only.

Generally, a subset of the instrument keys is already now selectable, but it may be incomplete. Due to structure of the presently used cgi scripts (e.g. `trend_query_fors2_a`), only 2 or 3 filter options can be handled properly. Anything more than that is too complex to cope with.

With the `qc1_browser`, that restriction can be dropped, and the filtering can be done more consistently.

It is important to note that contrary to the `qc1_browser` interface, the options offered are not read from the database, but have to be provided by us!

7 Filter options for qc1_general

Once the filter options for `qc1_general` are established, it is straightforward to have them also implemented in the `qc1_browser` interface. This is a feature which is lacking at present but would be very useful.

8 Error handling

The presently used scripts like `trend_query_fors2_a` have a rather complete error handling for cases like:

- no data found
- selection not permitted

It should be checked that `qc1_general` (and also `qc1_browser`) have the same error handling.

Table 1: Definition of displayed keys: the UVES example

QC1 item	keys selected for display
bias	civil_date; mjd-obs; median_master; sigma_master; sigma_raw; struct_row; struct_col; mean_ratio_ref; sigma_ratio_ref
dispersion rms	civil_date; mjd-obs; lambda_central; resid_avg; resid_rms; nlin_tot; nlin_res; nlin_sel; slit_width; bin; chip; ins_mode
resolving power	civil_date; mjd-obs; resol_med; resol_rms; lambda_central; slit_width; bin; chip; ins_mode
FF structure	civil_date; mjd-obs; sigma_ph; sigma_dx; sigma_dy; mean_master; lambda_central; slit_width; bin; chip; ins_mode; lamp
FF lamp stability	civil_date; mjd-obs; signal_master; lambda_central; slit_width; bin; chip; ins_mode; lamp
grating stability	civil_date; mjd-obs; lambda_central; mean_dx; mean_dy; median_shftx; median_shfty; nlin_all; nlin_sel; ins_temp4_mean; ins_press_mean; bin; chip; ins_mode
efficiency DQE	civil_date; mjd-obs; lambda_central; max_effic; wave_c; airmass; slit_width; bin; chip; ins_mode
efficiency long	civil_date; mjd-obs; lambda_central; max_effic; wave_c; airmass; slit_width; bin; chip; ins_mode

Table 2: Translation of QC1 items: the UVES example

QC1 item	present value	future value (QC1 table name)
bias	bias	uves_bias
dispersion rms	disp	uves_wave
resolving power	resol	uves_wave
FF structure	struct	uves_flat
FF lamp stability	effic	uves_flat
grating stability	fmt	uves_fmtchk
efficiency DQE	stdeffic	uves_std
efficiency long	stdnight	uves_std