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Gemini Data Handling System Report

ICD 15 — Database Interface

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This document describes the interface to the DHS databases.

1.0 Introduction

The Data Handling system (DHS) provides the facilities for storage of astronomical catalogues, (external database) and maintains a database of observations taken with the Gemini telescopes (DHS database). This document describes the interface through which the DHS provides access to these databases.

1.1 Purpose

This Interface Control Document (ICD) describes the low-level interface to the DHS databases. This interface will allow access to the DHS astronomy database, and to the Gemini observation catalogue maintained by the DHS from clients anywhere in the world.

1.2 Scope

This document defines the low-level interface to be used to access the DHS databases. This document does not give the details of the contents of the DHS databases that will be available through this interface. The details of the database contents will be described in a PDF like document produced later in the design process.

1.3 References

The following documents should also be consulted:

[1] *The Common Gateway Interface*, http://hoohoo.ncsa.uiui.edu/cgi

[2] *Astronomical Server URL*, http://vizier.u-strasbg.fr/proj/asu.htm, M. Albrecht (ESO / Garching, Germany), M. Barylak (ESA / IUE, Villafranca, Spain), D. Durand (CADC - DAO / Canada), P. Fernique (CDS / Strasbourg, France), F. Ochsenbein (CDS / Strasbourg, France), F. Pasian (OAT / Trieste, Italy), B. Pirenne (ST-ECF / Garching, Germany), D. Ponz (ESA / IUE, Villafranca, Spain), M. Wenger (CDS / Strasbourg, France)

[3] *ICD 1a — The System Command Interface*, GSCG.KKG.009/009, Kim Gillies, Gemini 8m Telescopes Project

[4] *ICD 1b - The Baseline Attribute/Value Interface*, GSCG.grp.024, Kim Gillies, Steve Wampler, Bret Goodrich, Gemini 8m Telescopes Project

[5] *ICD 1c — Baseline DHS interface*, dhs_pdr_icd1c/02, Norman Hill, Séverin Gaudet and Dayle Kotturi, HIA

[6] *OcsWish Technical Manual,* ocs.ocs.012-OcsWishTechnical/01, Shane Walker, Kim Gillies, Gemini 8m Telescopes Project

[7] *ESO Skycat Tool*, A. Brighton, T. Herlin, M. Albrecht, D. Durand, P. Biereichel, ESO

[8] *Very Large Telescope Software, Real Time Display User Manual,* VLT-MAN-ESO-17240-0866, Issue 2.2, ESO

1.4 Abbreviations and Acronyms

API	Application Programming Interface
ASU	Astronomical Server URL (see glossary)
CGI	Common Gateway Interface (see glossary)
DHS	Data Handling System
DSS	Digitized Sky Survey
HTTP	HyperText Transfer Protocol
ICD	Interface Control Document
OCS	Observatory Control System (see glossary)
PDF	Parameter Description File
SQL	Structured Query Language (see glossary)
URL	Universal Resource Locator
WWW	World Wide Web

1.5 Glossary

Astronomical Server URL — A standard proposed in [2] which will allow standardized access to astronomical catalogs over the world wide web.

Common Gateway Interface (CGI) — A standard for converting HTTP requests into the execution of programs on the server system, with the output from the executable being returned to the client system for display.

Data Handling System (DHS) — That part of the Gemini Control System responsible for displaying, processing, saving and archiving data in a standard way.

Database — See DHS database.

DHS database — The DHS database contains records of observations made along with their header parameters, the history logs from the various principal systems, the data dictionary, etc. This will be in a commercial relational database management system, currently baselined to be SYBASE.

External database — This is a database of astronomical catalogs required by various Gemini systems. The external database will include lists of guide stars, catalogs of non-stellar objects, spectral and flux standards, radial velocity standards, emission line nebulae and radial velocity standards.

Hypertext — A system in which documents contain links that all readers to move between areas of the document, following subjects of interest in a variety of different paths.

Observatory Control System (OCS) — That part of the Gemini Control System responsible for coordinating the activities of the observatory. It interacts with the observer and operator and issues commands to the other Principal Systems.

Structured Query Language (SQL) — A standard language, common in commercial database management systems, used for specifying how to search a database for items matching certain criteria. The criteria can involve arithmetic and logical combinations of record properties (tuples).

Universal Resource Locator (URL) — A string used to identify resources in the World Wide Web.

World Wide Web — World Wide Web: A hypertext system that allows users to "travel through" linked documents, following any chosen route. World Wide Web documents contain topics that, when selected, lead to other documents.

1.6 Stylistic conventions

References to other documents are given using a number in square brackets, for example [1]. The exact references are given in Section 1.3 on page 1.

2.0 Overview

The interfaces defined in [3], [4], and [5] are constrained to operating within the Gemini sites for various reasons, and since it is necessary for the database access to be available outside the Gemini sites, a new ICD for database access was deemed to be necessary. The interface described in this document is the interface proposed by an archive consortium of astronomical data archiving centres to provide a common World Wide Web (WWW) interface to all astronomical catalogues maintained by all complying institutions.

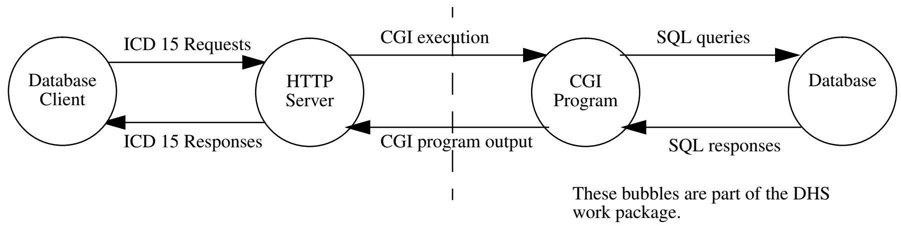
The archive consortium consists of ESO, ESA/IUE, CADC/DAO, CDS, OAT, and ESA/ECF. The Archive Consortium goal is to design and implement an astronomical oriented protocol based on HTTP in order to standardize data/catalogue exchange between archive providers and researchers. All together the consortium members represent a good fraction of all astronomical archives available. The first implementation will be for supporting the first official version of SKYCAT.

The proposed interface described in [2] specifies a standard format for URLs used to request data from astronomical catalogues via the WWW, and the format of the output produced in response to the request. ESO is one of the participating institutions in the development of this standard, and they intend to modify the CatSelect classes to use this standard. Since the CatSelect classes are being integrated into OCSWish (see [6]) as part of the ESO VLT RTD integration, very little additional work should be required to support this interface in an OCSWish client. See documents [7] and [8] for a description of the ESO VLT RTD widgets, and the CatSelect classes.

Since this interface is WWW based, the only constraint it imposes on the client systems is that they be able to issue WWW requests.

To support this interface, the DHS will provide any necessary Common Gateway Interface (CGI) [1] programs. A data flow diagram for ICD 15 is shown in Figure 1 on page 4

FIGURE 1. ICD 16 Data flow diagram



3.0 Interface Details

See document [1] which describes the use of the CGI system in general, and document [2], which describes a proposed standard for using URLs and the CGI system to access astronomy databases.