

WMO

CGMS

**DVB-S OPERATOR STANDARDS
FOR THE INTEGRATED GLOBAL DATA
DISSEMINATION SERVICE (IGDDS)**

Version 1, April 2009

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1 INTRODUCTION

1.1 Purpose and Scope

The purpose of this document is to define the minimum standards that are applicable to IGDDS Operators who use Digital Video Broadcast by Satellite (DVB-S) and further evolutions of this standard, for broadcasting.

For the purposes of this document, an IGDDS Broadcast Operator is defined as the managing entity responsible for the provision of a dissemination service within a particular region, using a telecommunications spacecraft and DVB-S.

These standards have been produced with the aim to ensure that the broadcast services implemented within the IGDDS project can satisfy the WMO IGDDS high-level requirements contained in section 4 of the IGDDS Implementation Plan, [AD.1] and, in particular, are operationally reliable, worldwide interoperable, and compliant with the WMO Information System (WIS) standards.

In developing these standards, advantage has been taken of ancillary information provided at the first meeting of the IGDDS Implementation Group, [RD.2], and the associated action responses.

1.2 Structure of the Document

The document consists of the following main sections:

- Section 1: Introduction;
- Section 2: Standards;
- Section 3: Next steps.

The annexes include information on file naming convention and metadata, and a list of acronyms.

1.3 Applicable Documents

[AD.1]: IGDDS Implementation Plan, WMO Space Programme.

1.4 Reference Documents

[RD.1]: WMO IGDDS Implementation Group 1st Meeting, Final Report.

1.5 Open Issues

The following open issues remain to be clarified

- 1) Compliance with WIS standards and the need to go beyond metadata and file naming [and, for example, include compliance with the DCPC elements of the WIS specifications, DCPC functional requirements, metadata catalogue requirements, WIS reporting requirements (a placeholder for reporting has been included in the standards) etc]. In this respect it is noted that the minimum functionality of a DCPC is still under discussion.
- 2) Governance arrangements are in the process of being defined for WIS. IGDDS Broadcast Operators, being part of WIS, will have to comply with these governance arrangements.

2 STANDARDS

Standards for IGDDS Broadcast Operators are defined in the following areas:

- Architecture;
- Dissemination Broadcasts, File Formats, File naming and Metadata;
- User consultation on Data Requirements;
- Data Reception Terminals;
- Publication of Service Information;
- User Support Service;
- Maintenance and Operations;
- Reporting.

2.1 Architecture

Architectural requirements are defined in two areas:

- functionality;
- redundancy.

2.1.1 Functionality

Each IGDDS Broadcast Operator shall ensure that their regional component of the IGDDS has the minimum functionality required to meet the objectives defined in [AD.1]. This means that each regional IGDDS component shall have the capability to:

- i) collect data from:
 - meteorological geostationary satellite systems;
 - global data from meteorological Low Earth Orbit (LEO) satellite systems;
 - regional transmissions of direct broadcast data from meteorological LEO satellite systems;
 - R&D or environmental satellites
 - other regions (through inter-regional data exchange mechanisms).
- ii) provide data to other regions for dissemination by other IGDDS Broadcast Operators (through inter-regional data exchange mechanisms).
- iii) disseminate data in Near Real Time (NRT) within their region of responsibility and in accordance with a dissemination schedule established in consultation with users;
- iv) assign priorities for the NRT dissemination of data so as to fulfil the various data timeliness requirements in an optimum manner.
- v) selectively control access to data, depending on the user's registered profile and in accordance with the data policy of the owner of the products/data and with WMO Resolution 40 (Cg XII).
- vi) maintain a metadata catalogue that is searchable by users (applicable standards TBD);
- vii) provide an on-demand data retrieval and dissemination service for users.

2.1.2 Redundancy

IGDDS Broadcast Operators shall take measures to ensure that appropriate redundancy levels are embedded within their systems in order to:

- avoid single point failures;
- enable the service availability commitments can be met (see section 2.5).

It is expected that the redundancy levels would be adjusted to reflect the particular circumstances of a region, i.e.:

- where alternative, operational, dissemination means are available within a region (e.g. direct broadcast, internet,...) redundancy levels could take account of these potential fall-back solutions in the assessment of single point failures;
- where no viable alternative dissemination means are available within a region, the IGDDS Broadcast Operator shall ensure that redundancy levels are such that single point failures are avoided.

2.2 Dissemination Broadcasts, File Formats, File Naming and Metadata

2.2.1 Dissemination Broadcasts

The broadcasts shall make use of Digital Video Broadcast by Satellite (DVB-S) and the Internet Protocol (IP) - this refers to the "Transport Layer" in the Open Systems Interconnection (OSI) model of the International Standards Organisation (ISO).

2.2.2 File Formats

Data disseminated shall be in internationally agreed formats - this refers to the "Session" and "Application" layers in the Open Systems Interconnection (OSI) model of the International Standards Organisation (ISO).

2.2.3 File Naming and Metadata

The file naming and metadata standards stem from the role of IGDDS within WIS and require that IGDDS Broadcast Operators provide information in files with unique names, and that for each file name or family of filenames, there is a partner metadata file.

Further information on the applicable file naming convention and the standard for metadata is provided in Annex 1.

2.3 User Consultation on Data Requirements

An appropriate regional Rolling Requirements Review Process shall be implemented to establish users' regional data requirements. These requirements shall then be reflected in the data dissemination schedule for the region.

2.4 Data Reception Terminals

Data reception terminals (both hardware and software) should be openly available at affordable prices (typically around US\$1,000).

2.5 Publication of Service Information

In order to keep users informed about the service, the IGDDS Broadcast Operator shall maintain an up-to-date web-site which shall contain the following service-related information:

- the geographical coverage of the dissemination footprint;
- the dissemination schedule;
- a description (content and formats) of the data and products included in the dissemination schedule;
- the target timeliness of the service;
- the target availability of the service;
- details of the user reception equipment requirements (for receiving data from the satellite broadcast system);
- the administrative procedures to be followed by a user in order to gain access to the data;
- operational points of contact for users to report problems with the service, and obtain operational support (including email addresses and telephone numbers);
- long-term planning information that may affect the service in the future (e.g., planned outages, upgrade of software version, etc).
- quality monitoring results (availability performance, bit error rate, timeliness, etc)

2.6 User Support Service

A user support service shall be provided to assist users with:

- user registration and subscription;
- operational problems and queries.

2.7 Maintenance and Operations

In order to help ensure that the service provided is of an appropriate quality, the IGDDS Broadcast Operator shall:

- ensure that the maintenance approach (e.g. levels of redundancy, spares holdings, maintenance contracts and maintenance team size) is consistent with meeting the stated service availability targets (see section 2.5);
- ensure that adequate arrangements are in place to monitor the satisfactory performance of the service (supported by the availability of validated operational and maintenance procedures);
- utilise an appropriate system for the tracking and resolution of operational anomalies;
- ensure that all operations and maintenance staff are appropriately trained;
- ensure that appropriate provisions are in place to protect against unauthorised access to the IGDDS equipment (from both physical, and network security points of view).

2.8 Reporting

IGDDS Broadcast Operators shall provide monthly performance reports in accordance with the relevant WIS requirements (applicable document TBD).

Annex A-1: File naming and Metadata

File naming convention

An update on Code and Format Harmonisation Issues was provided by the WMO Secretariat at the first meeting of the RARS Implementation Group (RARS IG-1, Document 6). This document goes into specific details about the file naming conventions requirements for WMO systems, based on the Manual on GTS Attachment II-15 "Recommended Practices and Procedures for the Implementation, Use and Application of TCP/IP on the GTS."

The Manual on GTS is available online via the WMO GTS Web Page at http://www.wmo.int/pages/prog/www/TEM/GTS/ManOnGTS_en.html

In particular, WIS Filenames ideally take the form of

| |
|---|
| <code>pflag_productidentifier_oflag_originator_yyyyMMddhmmss[_freeformat].type[.compression]</code> |
|---|

where components other than the 'free format' component are defined in the above reference, presently on page A.II-15/32.

Metadata file

The key to interoperability within WIS, is the ability to easily read and search on metadata that provides a high level description of what the information is, its purpose, geographical extent and where to access the information. The WIS Metadata Working Group have identified that the metadata standard to be used is the ISO19115, accompanied by the other ISO19100 series standards as needed. To be compliant with the ISO19115 standard at the highest level is depicted in examples included in ISO19115. However, the Metadata Working Group have identified several shortcomings in the standard and have created a profile of the standard which has some additional compulsory and optional components.

The WMO profile is available online from the WMO data management page at <http://www.wmo.int/pages/prog/www/WDM/wdm.html> and under metadata, [WMO core profile of the ISO metadata standard](#) or directly from [http://wis.wmo.int/2006/metadata/WMO_Core_Metadata_Profile_\(October_2006\)/documentation.htm](http://wis.wmo.int/2006/metadata/WMO_Core_Metadata_Profile_(October_2006)/documentation.htm)

Note that to utilise the ISO profile, you require a copy of the ISO standard 19115 from ISO.

Annex A-2: Acronyms

| | |
|-------|--|
| DCPC | Data Collection or Production Centre |
| DVB-S | Digital Video Broadcast by Satellite |
| GTS | Global Telecommunications System |
| IGDDS | Integrated Global Data Dissemination Service (to become: Integrated Global Data Dissemination Strategy) |
| IP | Internet Protocol |
| ISO | International Organization for Standardization |
| LEO | Low Earth Orbit |
| NRT | Near Real Time |
| OSI | Open Systems Interconnection |
| RARS | Regional ATOVS Retransmission Service |
| WIS | WMO Information System |
