|  |  |  |
| --- | --- | --- |
| WORLD METEOROLOGICAL ORGANIZATION  COMMISSION FOR BASIC SYSTEMS  -----------------------------  THIRD MEETING OF  INTER-PROGRAMME EXPERT TEAM ON CODES MAINTENANCE  MARRAKECH, MOROCCO, 15 - 19 APRIL 2019 |  | IPET-CM-III / Doc. 9.1  10.04.2019  -------------------------  ITEM 9.1  ENGLISH ONLY |

IPET-CM AND TASK TEAMS

New editions of Table-Driven Code Forms

Implications for the further Re-Architecting of coding formats

*Submitted by Richard Weedon (UK Met Office)*

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Summary and Purpose of Document**

Discussion of the implications of the introduction of a new architecture for BUFR

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**ACTION PROPOSED**

The team is requested to consider the document and if in agreement issue a re-analysis of the requirements for BUFR edition 5.

**ANNEXES:**

1. Terms of reference for the TT-BUFR

**DISCUSSIONS**

Delays in many of the projects associated with the transformation / conversion of data encoded to Traditional Code Formats, have resulted in an significant increase in the overheads associated with their management.

To outline but a few: -

* The date originally set down for the completion of the Migration to Table-Driven Codes Project was passed by at least 8 years ago. Regardless of this , many centres are still unable to comply with the requirements of the project and continue to transmit data in Traditional Alphanumeric code formats.

In line with the guidance issued at the start of the project, RTH’s and GISCS are providing facilities for the conversion of the data albeit for a limited amount of time. The introduction of a new edition of BUFR (incorporating a new architecture) will compound this problem as centres find themselves unable to process data encoded to the new standard.

* The team will also recall that in 2012 (IPET-DRMM III, Melbourne) ICAO announced plans for the representation of OPMET data in a variant of XML (GML from the open Geospatial Consortium).

IWXXM is currently in the process of being refactored in a backwards incompatible fashion, which has resulted in significant delays.

As a result, many centres and customers have been slow or unable to comply in the adoption of the new IWXXM standard.

* The adoption of WIGOS metadata standards and the implementation of WIGOS Identifiers within BUFR messages will cause major issues across all areas tasked with the management and or processing of data. This is due in part to the uncertainty that surrounds the eventual structure of the new identifier. It is certain that when the new system is adopted, the downstream impact will be large.

**PROPOSAL**

The development of the new edition of BUFR has continued through the work of the TT-BUFR (see annexe 1 for TOR), which was convened circa 2012. At that time a few requirements were agreed upon, formost of which was to provide a greater degree of interoperability with other data coding standards.

The requirement for greater interoperability has forced the task team to question the suitability of the current BUFR architecture, and whether the adoption of an alternative (more closely aligned to NetCDF / HDF5) could be justified. This is a major step away from the approach originally envisioned in 2012, which would have seen a series of incremental developments without any changes in architecture.

Before considering the requirements for the next edition of BUFR, we must first take into account the development of the next generation of WIS. The requirements for WIS II[[1]](#footnote-1) include measures to provide a greater degree of interoperability which would negate the need for the original requirement within BUFR.

In pursuing the development of an alternative architecture for BUFR, we must also acknowledge the downstream impact that changes in BUFR architecture will have on systems tasked with the processing of data. The cost of managing the transition from the old to the new architecture is extremely difficult to assess. When combined with the overheads resulting from our current obligations, it almost certain that the result will be unacceptable to most.

**Re-Analysis Request**

Considering the points made above, the UK Met Office requests –

1. Clarification on the longevity of BUFR edition 4 and GRIB edition 3 within operational meteorology.
2. A revaluation of the requirements for BUFR edition 5, considering the points made above.
3. A joint activity between the IPET-CM and the IPET-DD[[2]](#footnote-2) to gather proposals for:
4. Work packages that may meet (or partially meet) these requirements.
5. Alterations to these requirements.
6. Input on the priority and implication of the requirements.

**Annex 1 -** Terms of reference for the TT-BUFR

**Task Team on BUFR (TT-BUFR)**

(a) Identify issues that cannot be addressed by the current editions of BUFR and develop the requirements for the next edition of BUFR.

(b) Develop the next edition of BUFR to include the definition of the BUFR format for representation, design and content of BUFR tables, the “grammar” and “syntax” used when representing data in BUFR and defining tests that validate the correct operation of tools to support the new BUFR edition - in a way that is compatible with the WMO Logical Data Model.

(c) Implementing machine readable versions of the BUFR tables that allow automatic updating of applications based on BUFR.

(d) Development of the specifications that are necessary to allow standard utilities to manipulate BUFR files to be created and maintained.

1. <https://wis.wmo.int/wis2> [↑](#footnote-ref-1)
2. <https://wiswiki.wmo.int/tiki-index.php?page=IPET-DD&structure=WIS+up> [↑](#footnote-ref-2)