

UPDATE TO FOURTH ROUND SADIS FTP WORKSTATION SOFTWARE EVALUATION CRITERIA

(as endorsed by WG-MOG/3 (SADIS) 13-14 June 2016, Final Report, agenda item 5)

Workstation provider:	Info-Electronics Systems Inc.
Software application:	Met-WebGIS
Software Version No. (Release date):	1.0
Evaluation date:	28/11/2017
Evaluation location:	Evidence provided during real time sessions, screenshots supplied via Google Drive etc.
Evaluator:	Chris Tyson, SADIS Manager (until 21 April 2017), Karen Shorey SADIS Manager

Software Functionality	Available and Compliant? ✓✗	Comments
1. Display of OPMET data and other data types in text format	✓	
2. WAFS GRIB2 decoder and compliant display package	✓	
3. WAFS SWH and SWM BUFR decoder and compliant display package	✓	
4. Display and ability to prompt users of the arrival of BUFR SIGWX or PNG SIGWX chart corrections	✓	
5. Display and ability to prompt users of the arrival of SADIS administrative messages	✓	

Software Functionality	Available and Compliant? 	Comments
6. Display of tropical cyclone advisory statements		
7. Display of tropical cyclone advisory graphics		
8. Display of volcanic ash advisory statements		
9. Display of volcanic ash graphics		
10. Display bulletin contents from the WMO header		
11. Display of special AIREPS		
12. Display of WAFS SIGWX charts in the PNG (portable network graphics) chart format.		
13. Processes Digital Signature and Digital Certificate to check authenticity and integrity of Secure SADIS FTP		

*Note. – Please refer to the accompanying notes that detail the requirements and whether the functionality was **COMPLIANT** or **NON-COMPLIANT** at time of evaluation.*

Requirements

The numbers of the notes below correspond to the numbers of the items listed in the table above. For a software package to receive a ✓ or **COMPLIANT** as opposed to ✗ or **NON-COMPLIANT** in the "Available and Compliant" column on the table, all of the functions detailed below need to be satisfied for each functionality item.

For every workstation provider agreeing for their software to be evaluated under these criteria, the intention is to make the information available to all existing and prospective SADIS users via the SADIS web page at URL: <http://www.metoffice.gov.uk/aviation/sadis/software>.

Ability for the data to be sourced from SADIS FTP.

1. i) The ability to receive and display OPMET data and other data types in text format (including TAFs, METARs, SPECIs, SIGMETs, EUR region AIRMETs and GAMETs, and ASHTAMs and NOTAMs related to volcanic ash);

Objective 1: Demonstrate retrieval of all TAFs from each of the following regions; CARSAM, NAM, EUR/NAT, MID, ASIAPAC; using SADIS User Guide Annex 1 for ICAO Location IDs. Retrieval of 20 random TAFs from each of the regions above as directed by the SADIS Manager during the evaluation will also be required. **COMPLIANT**

Objective 2: Demonstrate retrieval of all METARs from each of the following regions; CARSAM, NAM, EUR/NAT, MID, ASIAPAC; using SADIS User Guide Annex 1 for ICAO Location IDs. Retrieval of 20 random METARs from each of the regions above as directed by the SADIS Manager during the evaluation will also be required. **COMPLIANT**

Objective 3: Demonstrate retrieval of SPECIs from each of the following regions; CARSAM, NAM, EUR/NAT, MID, ASIAPAC. **COMPLIANT**

Objective 4: Demonstrate retrieval of valid SIGMETs from each of the following regions; CARSAM, NAM, EUR/NAT, MID, ASIAPAC. **COMPLIANT**

Objective 5: Demonstrate retrieval of valid AIRMETs from EUR region. **COMPLIANT**

Objective 6: Demonstrate retrieval of valid GAMETs from EUR region. **COMPLIANT**

Objective 7: Demonstrate retrieval of valid ASHTAM and NOTAMS relating to volcanic ash¹. **COMPLIANT**

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- ii) Prompt users of the arrival of a SIGMET, SPECI, ASHTAM and NOTAM related to volcanic ash.

Objective 1: Demonstrate alerts of received SIGMETs. **COMPLIANT**

Objective 2: Demonstrate alerts of received SPECIs. **COMPLIANT**

¹ It is acknowledged that there may be no available bulletins in which to demonstrate this. Self certification is acceptable.

Objective 3: Demonstrate alerts of received ASHTAM and NOTAMS relating to volcanic ash².
[COMPLIANT]

2. i) The functionality to enable a user to produce a wind-temperature chart from the GRIB2 data over a configurable user-specified area. Global coverage is required. The ability to produce charts spanning the International Date Line and including all of the standard ICAO areas³ is required.

Objective 1: Demonstrate display of wind/temperature chart from WAFC London and WAFC Washington⁴ GRIB2 data. Display examples for a sample of different levels (at least 5) and different timesteps (at least 3). [COMPLIANT]

- ii) A “zooming facility” for GRIB2 chart areas.

Objective 1: Demonstrate the maximum and minimum levels of 'zoom' that the user can use.
[COMPLIANT]

Objective 2: Demonstrate the 'pan' functionality of the software. [COMPLIANT]

- iii) The ability to produce a wind-temperature chart from GRIB2 encoded data that is largely identical as far as layout is concerned to the wind and temperature example chart contained in Appendix 1 of Amendment 76 to ICAO Annex 3. The product must clearly display whether the chart is derived from the WAFC London or WAFC Washington GRIB2 encoded data and additionally include the provider of the GRIB2 encoded data⁵.

Objective 1: Demonstrate that the product identifies whether the chart is derived from the WAFC London or WAFC Washington GRIB encoded data. [COMPLIANT]

- iv) The functionality to enable a user to produce Cumulonimbus, icing and turbulence charts from the GRIB2 data over a configurable user-specified area. Global coverage is required. The ability to produce charts spanning the International Date Line and including all of the standard ICAO areas⁶ is required.

Objective 1: Demonstrate display of Cumulonimbus, icing and turbulence⁷ charts from WAFC London and WAFC Washington⁸ GRIB2 data. Display examples of mean and maximum forecast data for a range of timesteps and levels, but demonstrating at least one example of every parameter⁹. [COMPLIANT]

² It is acknowledged that there may be no available bulletins in which to demonstrate this. Self certification is acceptable.

³ A, B, B1, C, D, E, F, G, H, I, J, K, M, NAT, EUR, MID, SOUTH ASIA

⁴ Strictly, it is up to the end user of the system to determine what source of WAFS data they use for their gridded WAFS upper air forecasts. Both WAFC London and WAFC Washington GRIB2 data is available on SADIS FTP.

⁵ Provider is a requirement of Amendment 75.

⁶ A, B, B1, C, D, E, F, G, H, I, J, K, M, NAT, EUR, MID, SOUTH ASIA

⁷ Test data and sample visualisations can be provided to assist in this element of the evaluation.

⁸ Strictly, it is up to the end user of the system to determine what source of WAFS data they use for their gridded WAFS upper air forecasts. Both WAFC London and WAFC Washington GRIB2 data is available on SADIS FTP.

⁹ Sample source data and visualisations can be provided to assist in demonstrating this functionality.

3. i) The functionality to enable a user to produce a SWH and a SWM SIGWX chart from BUFR data over a configurable user-specified area. Global coverage for the SWH data is required. The ability to produce charts spanning the International Date Line and covering all of the standard ICAO areas¹⁰ is required for the SWH data.

Objective 1: Demonstrate display of WAFC London SIGWX BUFR data over 3 previously defined, custom areas. Areas are at discretion of Software provider, but should demonstrate the extremes of useable zoom settings, and one should cross the international dateline. **[COMPLIANT]**

Objective 2: Demonstrate display of WAFC Washington SIGWX BUFR data over 3 previously defined, custom areas. Areas are at discretion of Software provider, but should demonstrate the extremes of useable zoom settings, and one should cross the international dateline. **[COMPLIANT]**

Objective 3: Demonstrate how areas of the globe not covered by SWM SIGWX BUFR forecast data are indicated to the user (i.e. how does the user know there is no information?). **[COMPLIANT]**

Objective 4: Demonstrate how user configurable areas are created. **[COMPLIANT]**

Objective 5: Demonstrate and provide hard copies of all SIGWX Charts for all ICAO Areas (excepting Area L). **[COMPLIANT]**

Objective 6: Demonstrate the ability to process WAFS SIGWX BUFR data during WAFC Backup events (WAFC London backing up WAFC Washington and WAFC Washington backing up WAFC London). **[COMPLIANT]**

- ii) A “zooming facility” for BUFR chart areas.

Objective 1: Demonstrate the limits of zoom for SIGWX charts generated from SIGWX BUFR. **[COMPLIANT]**

- iii) The ability to produce a SIGWX chart from BUFR encoded data that is *identical* as far as the meteorological content is concerned (including depiction of non-CB cloud areas and jetstream depth notation), *identical* as far as the chart legend¹¹ box text, and *largely identical* as far as other features are concerned (e.g. the position of text boxes), to a standard portable network graphics (PNG) SIGWX chart for the same area and meets the latest ICAO Annex 3 requirements. The product must clearly display whether the chart is derived from WAFC London or WAFC Washington BUFR encoded data, and the provider¹² of the data. If the software allows the user to modify any of the plotted meteorological parameters, reference to either WAFC *must* be automatically removed if such modification is carried out by the end user.

Objective 1: Provide for close scrutiny and comparison with equivalent WAFC generated PNG forecasts, the system’s own ICAO Chart areas as generated from WAFC SIGWX BUFR. All ICAO areas must be provided, selecting from 2 validity times. To be compliant, the system’s own SIGWX charts must be identical in meteorological content to that of the WAFCS PNG charts. **[COMPLIANT]**

¹⁰ A, B, B1, C, D, E, F, G, H, I, J, K, M, NAT, EUR, MID, SOUTH ASIA

¹¹ Note requirement to include ‘Provider’ information as per Amendment 75

¹² Required in Amendment 75

Objective 2: Text box/arrow head placement must lead to an unambiguous indication to users (including dispatchers and aircrew) of the meteorological situation¹³. **[COMPLIANT]**

Objective 3: The product must clearly display whether the chart is derived from WAFC London or WAFC Washington BUFR encoded data, and the 'Provider' of the data. **[COMPLIANT]**

Objective 4: Demonstrate that if the software allows the user to modify any of the plotted meteorological parameters, reference to either WAFC *must* be automatically removed if such modification is carried out by the end user. **[COMPLIANT]**

- iv) The ability to handle BUFR bulletins that contain no data – i.e. bulletins that are empty apart from message header information. In particular, this applies to the BUFR bulletins associated with surface fronts, namely:

JUFE00 EGRR, JUFE00 KKCI, JUJE00 EGRR; and JUJE00 KKCI.

Objective 1: Demonstrate that BUFR bulletins that contain no data do not cause a failure of the display of SIGWX. **[COMPLIANT]**

4. i) The ability to receive, prompt users and display the arrival of WAFS SIGWX corrections. These corrections are text messages issued with the following WMO header: FXUK65 EGRR or FXUS65 KKCI for BUFR-code and/or PNG SIGWX chart corrections.

Objective 1: Demonstrate that the user is alerted to FXUK65 EGRR and FXUS65 KKCI messages. **[COMPLIANT]**

5. i) The ability to receive, display and prompt users of the arrival of SADIS administrative messages. These are text messages issued with the following WMO headers:

NOUK10 EGRR; NOUK11 EGRR; NOUK12 EGRR; NOUK13 EGRR; NOUK31 EGGY; and NOBX99 EBBR

Objective 1: Demonstrate that the user is alerted to NOUK10 EGRR and NOUK11 EGRR messages. **[COMPLIANT]**

6. i) The ability to receive, display and prompt users of the arrival of tropical cyclone advisory statements. These bulletins are in text format and are of the form FK**** CCCC.¹⁴

Objective 1: Demonstrate that the user is alerted to FK**** CCCC messages. **[COMPLIANT]**

¹³ It is essential that dispatchers and aircrew can quickly and unambiguously understand the meteorological situation from the charts.

¹⁴ Prior to Evaluation, as much evidence of receipt, notification and display (screenshots, or other evidence) should be collected to demonstrate such messages are dealt with appropriately

7. i) The ability to receive, display and prompt users of the arrival of tropical cyclone advisory graphics. These bulletins are in PNG format and are of the form T₁T₂A₁A₂i i¹⁵ CCCC.¹⁶

Objective 1: Demonstrate that the user is alerted to T₁T₂A₁A₂i i CCCC messages relating to tropical cyclone advisory graphics. **[COMPLIANT]**

8. i) The ability to receive, display and prompt users of the arrival of volcanic ash advisory statements. These bulletins are in text format, and the WMO headers of those currently available for dissemination of SADIS are listed below. These bulletin headers are of the form FV**** CCCC¹⁷.

FVAK(20-25) PAWU; FVXX(01-03) EGRR; FVXX05 EGRR; FVXX(20-27) KNES;
FVXX(01-05) LFPW; FVFE01 RJTD; FVCN(01-04) CWAO; FVAU(01-10) ADRM;
FVAG(01-05) SABM; and FVPS(01-05) NZKL.

Objective 1: Demonstrate that the user is alerted to the above messages. **[COMPLIANT]**

9. i) The ability to receive and display volcanic ash graphics (VAG). These graphical charts are in PNG chart format (as available). The products that may be available for dissemination on SADIS have the following WMO headers:

PFXD(01-10) ADRM; PFXD(01-03) EGRR; PFXD05 EGRR; PFXD(20-27) KNES;
PFXD(05-09) LFPW; PFXD01 RJTD; PFXD(01-05) NZKL; PFXD(01-04) SABM;
PFXD(01-04) CWAO; PFXD(21-25) PAWU(21-25)¹⁸

Objective 1: Demonstrate that the user is alerted to the above messages. **[COMPLIANT]**

10. i) The functionality to enable a user to display the contents of a single bulletin (including all types of bulletins except GRIB and BUFR encoded bulletins) by typing in the WMO header of the bulletin.

Objective 1: Demonstrate retrieval of at least 20 bulletins covering a range of bulletin types. **[COMPLIANT]**

¹⁵ Currently, there is only one known TCAC issuing Tropical Cyclone Advisories in graphical form. La Reunion uses PZXD0(1-4) FMEE.

¹⁶ Prior to Evaluation, as much evidence of receipt, notification and display (screenshots, or other evidence) should be collected to demonstrate such messages are dealt with appropriately

¹⁷ Prior to Evaluation, as much evidence of receipt, notification and display (screenshots, or other evidence) should be collected to demonstrate such messages are dealt with appropriately

¹⁸ Prior to Evaluation, as much evidence of receipt, notification and display (screenshots, or other evidence) should be collected to demonstrate such messages are dealt with appropriately

11. i) The ability to receive, display and prompt users of the arrival of special AIREPS. These bulletins are in text format, and the WMO headers of the bulletins currently available for dissemination on SADIS are listed below. The bulletins are of the form UA** (60-79) CCCC.¹⁹

UA//60-69 CCCC;; and UA// (70-79) CCCC

Objective 1: Demonstrate that the user is alerted to the above messages. [COMPLIANT]

12. i) The ability to receive WAFS SIGWX charts in the PNG (portable network graphics) chart format and display them using standard visualisation software, e.g. web browser.

Objective 1: Demonstrate the display and provision in hard copy form of the PNG format SIGWX Charts. Demonstrate for at least 5 ICAO Areas (including at least 2 SWM), for at least 2 different validity times. [COMPLIANT]

Objective 2: Demonstrate the ability to process WAFS SIGWX PNG charts during WAFS Backup events (WAFS London backing up WAFS Washington and WAFS Washington backing up WAFS London). [COMPLIANT]

13. i) To correctly process files and Digital Certificate/Digital Signatures in order to check authenticity and integrity of data downloaded from SADIS FTP.

Objective 1: Demonstrate that the Digital Certificate is checked, and relevant details are available for authenticity checks. [COMPLIANT]

Objective 2: Demonstrate that the system can deal with a change of Digital Certificate. [COMPLIANT]

Objective 3: Demonstrate how a user is alerted to a failure of processing the Digital Certificate, and the options available to the user with regard to continuing to accept data. [COMPLIANT]

Objective 4: Demonstrate how user responses to Objective 3 are logged and stored. [COMPLIANT]

Objective 5: Demonstrate that the Digital Signature is appropriately handled/processed with the relevant file to prove that there has been no corruption/tampering. [COMPLIANT]

Objective 6: Demonstrate how a user is alerted to a failure to confirm that a file has not been corrupted/tampered with, and the options available to the user with regard to continuing to accept data. [COMPLIANT]

Objective 7: Demonstrate how user responses to Objective 6 are logged and stored. [COMPLIANT]

Objective 8: Explain the 're-try/re-poll' policy, should initial attempts at re-loading Digital Certificates/Digital Signatures produce fails²⁰. [COMPLIANT]

¹⁹ Prior to Evaluation, as much evidence of receipt, notification and display (screenshots, or other evidence) should be collected to demonstrate such messages are dealt with appropriately

²⁰ This is required to deal with rare occasions where there may be a small delay in the availability of the Digital Signatures after the relevant and equivalent data file has been delivered.

APPENDIX A

Agreement between SADIS Provider and SADIS Workstation Software providers, relating to the evaluation of SADIS workstation software

Evaluation Options:

1) Provision (by the SADIS workstation software provider) of a laptop (to be returned of course) pre-loaded with the software to be evaluated, and sample data installed.

This will allow the SADIS Provider to use the software to evaluate what the system can do.

The laptop might be couriered, or if preferred a staff representative (of the workstation vendor) could attend to demonstrate the system. (note, it is regretted that the SADIS Provider's IT Security Restrictions would prevent connection of non Met Office laptop to any of our systems or the internet that would provide access to live SADIS data).

2) Completion by the SADIS workstation software provider of a self-evaluation/self-certification form, supported by the evidence of screenshots and hard copy printouts of charts/logs demonstrating compliance.

To do this, a date and time period will be agreed from which the workstation software supplier should demonstrate the necessary functions by provision of screenshots, logs, hard copy, and sufficient explanatory text to show that their systems meet the evaluation requirements. The SADIS Provider will review against equivalent data in order to cross reference the workstation provider's screenshots/logs/hard copy with the original data provided.

3) The SADIS Manager can attend the offices of the SADIS workstation software provider and evaluate the system in realtime.

This would allow for the most realistic demonstration of the system in real time, and without some of the restrictions above.

For 'cost' purposes:

- The SADIS Provider would provide up to 16 hours of time 'cost free', to evaluate at a high level (see scope of evaluations below) the SADIS workstation software against the most recent SADIS evaluation criteria, as endorsed by SADISOPSG. Whilst substantial changes cannot be made without endorsement by SADISOPSG, some minor adjustments may be permissible dependent upon any changes endorsed by other official (particularly ICAO) groups/authorities.
- Should the evaluation extend beyond 16 hours, or if the SADIS Manager's involvement extends into more detailed 'consultancy' work then a charge of the SADIS Manager's time will be raised (the charge rates will be advised before entering into any commitment).
- The evaluation would have to be conducted in English for all verbal and written correspondence. Any requirement for translation facilities would need to be arranged by and met by the SADIS workstation software provider.

In the event of option 1), then courier costs and insurance for the laptop both to and from the Met Office at Exeter would need to be met by the SADIS workstation software provider. If a member of the SADIS workstation software provider staff accompanied the laptop to demonstrate the system then of course their travel/subsistence costs and hotel accommodation would need to be arranged/met by the SADIS workstation software provider.

In the event of option 2), then all costs for the generating and posting of evidence would be met by the SADIS workstation software provider. Email would be acceptable (~7MB limit on emails for UK Met Office), and it would be acceptable to send CDs/DVDs rather than large volumes of paper. Downloading from an ftp site (provided by the SADIS workstation software provider) would be acceptable. Costs of the SADIS workstation software provider's staff time in generating the material would of course be met by the SADIS workstation software provider.

In the event of option 3), then the SADIS Manager's travel, subsistence and (if necessary) hotel accommodation costs would need to be met by the SADIS workstation software provider.

Scope of Evaluations:

It should be noted that the evaluations are 'high level' evaluations of functionality, and not detailed technical certifications of compliance. Note that:

- a) The software evaluation process does not certify or endorse any single software application; neither does it recommend one application over another. The software evaluations are the results of software reviews that the Met Office has carried out on behalf of the ICAO SADISOPSG. The purpose of these reviews is to verify whether the applications can deliver certain minimum functions which the SADISOPSG considers are essential for the correct use of the WAFS and OPMET data; and
- b) It remains the responsibility of the user to ensure that procured software meets their full requirements. It is not intended that the software evaluations fulfil this task. The results from the software evaluations may be used as one additional source of information to aid any procurement process but should not be viewed in isolation of other important procurement requirements.

Additional:

The SADIS Provider will not publish the result of the SADIS workstation software evaluations on the SADIS Provider's web pages without prior agreement of the SADIS workstation software provider. However, the SADIS Provider will provide, and the SADIS workstation software supplier agrees to said provision, to the SADISOPSG with a copy of the full report - regardless of overall compliance of the software - and such reports will be available from the relevant SADISOPSG meeting documentation. As such, any SADIS workstation software evaluations should be considered to be available in the public domain.

Disputes:

Final decision upon compliance or otherwise against a particular criteria rests solely upon the SADIS Manager. There is no appeal or alternative evaluation option. Whilst the SADIS Manager and the SADIS Provider is willing to enter into some correspondence and will consider the opinions of those representing the workstation software providers, the SADIS Provider reserves the right to determine a final report based upon the evaluation exercise within a reasonable period (and in any case no more than 30 days) after the evaluation. Workstation software providers may supply additional data post evaluation to demonstrate that items identified as being non compliant have been addressed. The decision regarding subsequent compliance again rests solely with the SADIS Manager.