

COMMENTS TO INTEROPERABLE UPPER-AIR SYSTEMS FEASIBILITY STUDY, REQUESTED BY WMO EXECUTIVE COUNCIL

Background

From the Final Report of second session of the Joint Expert Team on Upper-Air Systems Intercomparisons (ET) and International Organizing Committee on Upper Air Systems Intercomparison (IOC):

6.1. Interoperable Upper-Air Systems

Following the request of the WMO Executive Council to encourage radiosonde systems providers to develop interoperable systems, International Met Systems, a member of the HMEI, was requested to investigate the feasibility of interoperability in upper-air sounding systems and to present a paper on this topic to ET/IOC.

6.1.2 The presented paper summarized experience of InterMet in manufacturing interoperable 1680 MHz systems, a demonstration test of which was done under the auspices of CIMO in Dar-es-Salaam, Tanzania, 2004, and also presented a discussion on whether interoperability can be extended to 403 MHz GPS type sounding systems.

6.1.3 It was agreed that a paper on the feasibility of Interoperable upper-air systems covering the aspects of system design, standardization, cost implication, benefits, concerns and risk assessment should be presented to the CIMO-XIV session to provide advice to members.

6.1.4 Mr Clowney, International Met Systems, agreed to prepare a discussion document on behalf of the HMEI and submit it to the Secretariat in March 2006. It should take advantage of knowledge available with other manufacturers and Meteorological services, especially Météo France that works on a design of the 403 MHz GPS Interoperable systems. The document would then be assessed by the ET/IOC and would constitute a basis for the presentation on this issue to the CIMO-XIV, December 2006.

Draft version of "Evaluating interoperability in upper air sounding system", Frederic A. Clowney, was submitted to radiosonde manufacturers for comments on Feb 2, 2006 by Bruce Sumner, HMEI Executive Secretary.

It is useful to determine the term "interoperability" in this context. In joint meeting Expert Team on Upper-Air Systems Intercomparisons (ET) and International Organizing Committee on Upper Air Systems Intercomparison (IOC) meeting on Nov 28 - 30, 2005, "interoperability" study was determined to typically concern small tropic countries that have limited NMS capabilities.

Vaisala's comments on the subject are listed below. We ask these comments to be forwarded to ET/IOC and not to be embedded in the document "Evaluating interoperability in upper air sounding system". This is for practical reasons: the issue is complex, and it would be very time consuming and challenging to prepare a paper, which all manufacturers, without any exceptions on details, would jointly agree upon.

Comments to interoperability

- RDF technology has known major performance shortcomings. Small size single paraboloid antenna systems suffer from signal ground reflections limiting the system operation range at high wind conditions.
- Moving parts in systems bring complexity and cause need for additional maintenance. When a sounding station is at a remote location reliable operation over long period of time can not be over-emphasized.
- Are radiosonde suppliers ready to commit to deliver radiosondes for use in an interoperable system, and which of these suppliers can make a delivery commitment for the lifetime of a system (10+ years)?
- The supplier of an interoperable ground system controls the pace that the systems are upgraded in the field. This may lead to non-optimal situation from the customer and from the radiosonde supplier point of view. Cost or performance related improvements can be unnecessarily delayed. Especially when an interoperable system supplier is a radiosonde supplier at the same time, a real competitive situation is never there.
- Interoperability does not improve actual data quality, as the data quality is always dependent on the radiosonde in use. Frequently changing the radiosonde in use is a challenge to climatology.
- The overall performance and data quality of an interoperable system lands at user's responsibility, as neither the system supplier nor the radiosonde supplier alone can guarantee the performance level.
- The responsibilities of system and sonde supplier are unclear. Which supplier assumes the responsibility when problems are reported? It is often difficult to say immediately whether a problem is system or radiosonde related. A multi-supplier environment makes troubleshooting more complex and costly.
- Interoperability requires a lot of coordination and deep collaboration between manufacturers. How realistic is this expectation in an increasingly competitive environment?

- Additional on-site operator training and ground system changes required when a new radiosonde is taken into use, easily consumes all savings obtained through re-tendering. True savings potential of the interoperable system is doubtful.
- Interoperability per se does not necessarily decrease the costs compared to single supplier RDF system. A very competitive situation is achieved also when suppliers are asked to make e.g. 10 year price commitment for radiosondes at the time of offering the ground system. An increasing number of users already do this.

Appendices

"Evaluating interoperability in upper air sounding system", Frederic A. Clowney, version 2006-02-01