

### Background and Mandate:

As agreed at the SuperDARN PI meeting that was held during the SuperDARN 2013 workshop at Moose Jaw, Saskatchewan (chaired by Prof. Mark Lester) a new Working Group (WG) has been formed to provide oversight, advice and counsel regarding the software that runs the SuperDARN radars. This is the software that is loaded onto the computers at the sites that issues commands to radar hardware and generates data files for download to the PI institutions and subsequent distribution, e.g., rawacf files, iqdat files. Processing of the files at the PI institutions and generation of the standard SuperDARN data products is the responsibility of the Data Analysis Working Group (DA-WG) that is headed by Pasha Ponomarenko (U. Saskatchewan). Distribution of the rawacf files is the responsibility of the Data Distribution Working Group (DD-WG) that is headed by Kevin Kreiger (U. Saskatchewan).

The chair of the OS-WG is Mike Ruohoniemi (Virginia Tech) and the co-chair is Julian Thornhill (Leicester University).

### Opening Statements

From Mike's first email to the PIs as Chair:

*Obviously I have no illusions about being an expert in this area. However, like other PIs I am highly motivated to understand what is happening in this code and it may be beneficial for us all if the reporting from this working group is pitched accordingly.*

*I see the scope of this working group as fairly limited for the time being. We seek to*

- i) Make an accounting of the systems that are in play now running radars or that are under development.*
- ii) Identify the individuals most responsible for each system*
- iii) Acquire information about what resources are needed to run each system, how the code is implemented, particular merits and limitations of each system*
- iv) Account for errors that can occur in operating software, pool information on their detection and correction*
- v) Offer direct support to SuperDARN groups who lack expertise in this area*
- vi) Keep the SuperDARN community informed of developments*

*I am requesting that each group nominate one person to serve on this working group. Ideally this would be the person in your group who is most responsible for programming your radar(s). The person can be a PI or a student. I will be asking for some persons to serve as co-chairs, primarily those individuals who are code developers as identified in (ii), and I might also ask people to participate who can bring in additional expertise.*

From Julian:

*I'd like to extend the charter to include consideration on how the radar software is to evolve in the next few years. Currently we have a mix of operating systems at the sites (mainly QNX4 and Linux) and no real strategy on how we are to move forwards. The strength of SuperDARN over the last few decades has been the common QNX2 and then QNX4 code base. Clearly QNX4 has no future, but I'd like to see us move to some sort of agreed model for the replacement. Fragmentation has already started, and we need to get back to some common standards, if only to conserve development effort and to avoid*

*confusion. For me, this is the one of the most important issues facing the future operation of the radars. At the moment it is not even clear to me what the preferred software distribution for a new radar might be. I'm currently reusing the QNX4 code that Rob Barnes wrote.*

### **Committee Membership:**

|             |                      |             |  |
|-------------|----------------------|-------------|--|
| Chair -     | Mike Ruohoniemi      | (VT)        | <a href="mailto:mikeruo@vt.edu">mikeruo@vt.edu</a>                                     |
| Co-Chair -  | Julian Thornhill     | (Leicester) | <a href="mailto:jth@ion.le.ac.uk">jth@ion.le.ac.uk</a>                                 |
| Members -   | Kevin Krieger        | (U Sas)     | <a href="mailto:kevin.krieger@usask.ca">kevin.krieger@usask.ca</a>                     |
|             | Kevin Sterne         | (VT)        | <a href="mailto:ksterne@vt.edu">ksterne@vt.edu</a>                                     |
|             | Jeff Spaleta         | (UAF)       | <a href="mailto:jspaleta@gi.alaska.edu">jspaleta@gi.alaska.edu</a>                     |
|             | Scott Brookes        | (DC)        | <a href="mailto:Scott.L.Brookes.14@dartmouth.edu">Scott.L.Brookes.14@dartmouth.edu</a> |
|             | Aur lie Marchaudon   | (IRAP/CNRS) | <a href="mailto:aurelie.marchaudon@irap.omp.eu">aurelie.marchaudon@irap.omp.eu</a>     |
|             | Mr. Dehong Huang     | (PRIC)      | <a href="mailto:huang@pric.gov.cn">huang@pric.gov.cn</a>                               |
|             | Karthik Kamalakkanna | (LaTrobe)   | <a href="mailto:K.Kamalakkannan@latrobe.edu.au">K.Kamalakkannan@latrobe.edu.au</a>     |
| Observers - | Dieter Andre         | (U Sas)     | <a href="mailto:dieter.andre@usask.ca">dieter.andre@usask.ca</a>                       |
|             | Yan Jingye           | (MirsLab)   | <a href="mailto:yanjingye@mirslab.cn">yanjingye@mirslab.cn</a>                         |

### **Communications:**

**(Action needed)** A web site will be maintained by the Virginia Tech SuperDARN group for the purpose of disseminating information about the Working Group and its activities.

Emails will be maintained via a regular email mailing list with all group members linked or via the official Group Mailing List (see Appendix 1) that is maintained by Leicester University and named

Darn-oswg

Information on subscribing to the list is available at [www.ion.le.ac.uk/mailling\\_lists.html](http://www.ion.le.ac.uk/mailling_lists.html) or apply directly via

[DARN-oswg-join@ion.le.ac.uk](mailto:DARN-oswg-join@ion.le.ac.uk) (no subject or Body is required)

Appendix 1 has more information about the Leicester mailing list.

### **Responsibilities:**

- 1) Set the contents of the hdw.dat files for the radars and distribute updates.
- 2) Assign ids for new radars, disseminate information about changes to the hdw.dat file.

- 3) Maintain records on the types of operating systems that are in place at the radars and monitor conformity with SuperDARN standards.
- 4) Make recommendations to PIs and to new groups on the selection of particular radar operating systems.
- 5) More....

**Immediate Action items:**

- 1) New radar ids: The LaTrobe and Leicester groups requested ids for radars under development at Buckland Park and Hokkaido, respectively. A sort-able list of radar info is available from the WG web site as 'Table of Radar Ids – sorted by id'. The assignments made were

**Buckland Park**            3-letter: bpk                      station ID: 24

**Hokkaido West**            3-letter: hkw                      station ID: 41

Any objections?

Note that nominal assignments have been made for Russian radars – please treat this information as confidential.

- 2) Need to check if any other radars have been assigned ids that are not tabulated in this list.

**Action needed >> Edits and additions to the list of radar ids by all with knowledge of heretofore unlogged radars**

- 3) Inventory of radar operating systems in play and planned.

**Obtain from each PI a description of the operating software that they are currently using and what they are planning on using. This information should be entered in the editable Audit documents.**

## Points for Consideration:

Julian:

*Just a further thought - we are going to have to bring hardware into this somehow as well. Defined software standards are inevitably going to require some sort of definition of the scope of the hardware. I really don't want to destroy either hardware or software innovation, but we can't have everyone doing their own thing just because it seems to be a fun engineering project. At Leicester we've tried hard to test any hardware changes against the questions;*

*Does it improve the science output?*

*Does it improve ease of operation, repair, reliability, or have a significant downward pressure on cost?*

*In reality, the onsite software and the hardware are two sides of the same coin.*

Karthik:

*I agree with Julian. As person writing code for a new radar system I see fragmentation as inevitable. At the same time, the mix of operating systems and the drift in the results that they produce are frustrating. Shared code is what makes SuperDARN tick. Like Julian pointed out we need to establish standards that all users have to stick to. This has to be our top priority. I also feel that we need a system where experienced groups can provide support for the validation of data for new members with their installations.*

## ***Appendix – Darn-OSWG Mailing List***

To send a message to all the list members, send email to

[darn-oswg@ion.le.ac.uk](mailto:darn-oswg@ion.le.ac.uk)

[darn-oswg-request@ion.le.ac.uk](mailto:darn-oswg-request@ion.le.ac.uk)

General information about the mailing list including the subscribers list is at:

<https://mail.ion.le.ac.uk/mailman/listinfo/darn-oswg>

If you ever want to unsubscribe or change your options (eg, switch to or from digest mode, change your password, etc.), visit your subscription page at:

<https://mail.ion.le.ac.uk/mailman/options/darn-oswg/mikeruo%40vt.edu>

You can also make such adjustments via email by sending a message to:

[Darn-oswg-request@ion.le.ac.uk](mailto:Darn-oswg-request@ion.le.ac.uk)

with the word `help' in the subject or body (don't include the quotes), and you will get back a message with instructions.

You must know your password to change your options (including changing the password, itself) or to unsubscribe.

Normally, Mailman will remind you of your [ion.le.ac.uk](https://ion.le.ac.uk) mailing list passwords once every month, although you can disable this if you prefer. This reminder will also include instructions on how to unsubscribe or change your account options. There is also a button on your options page that will email your current password to you.