SNEWS Collaboration Memorandum of Understanding

May 29, 1999

Abstract

This document describes the motivation for an inter-experiment privacy agreement for the SNEWS collaboration, the organization of the SNEWS working groups, the specific privacy rules that members must adhere to, and the specific data exchange agreement.

1 Introduction

A description of the SNEWS (SuperNova Early Warning System) project can be found in references [1, 2].

2 Motivation

Before forming an inter-experiment collaboration, it is desirable establish a set of formal rules to guide our sharing of data. There are several motivations.

First, it is clear that experimental collaborations wish to have control over their own data for the case of an interesting physical event such as a neutrino supernova. It may take considerable time and work of experts before a collaboration is willing to present its results to the scientific community. Collaborations do not wish to have their raw data propagated before it is ready, even if due credit is given. The nature of this early alert project makes this an especially pressing concern. So, in order to minimize the potential for intentional or unintentional dissemination of information before a collaboration has performed the necessary checks and analysis, all must agree in advance on what prompt information can be propagated.

Second, it is in the interests of all collaborations to be able to share both *test data* and *false alarms* promptly, before human checking, without worry that such information will be disseminated in any way outside of a very limited sphere. A free exchange of such information in a private context is essential for effective development of the inter-experiment coincidence implementation. In addition, a certain rate of false alarms is both acceptable and inevitable given that both Poissonian and "pathological" backgrounds exist. In order that thresholds be lowered enough to maximize sensitivity to supernovae, and in order for alarms to be issued in an automated manner, experimental collaborations should feel comfortable that their unchecked false alarms (of any nature) will not be logged for later publication or unauthorized exposure.

There is an additional important motivation for establishing strict privacy guidelines and security protocol: this is the danger that false supernova alerts could be generated by intruders, malicious or otherwise. Fraud may in fact be the biggest false alert danger. Therefore, access to the coincidence server machines should be considered with care.

3 SNEWS Organization

SNEWS, the inter-experiment collaboration, will have two tiers of privacy: the "working group" and the "subgroup" will correspond to lower and higher levels of security respectively. In addition, there will be an "advisory board" consisting senior members of each collaboration involved in the coincidence. Roles, areas of access, and security responsibilites for members of each group are described below. The names of the members of each group will be public.

3.1 The Working Group

- **Membership:** The "working group" will consist of persons wishing to contribute to the technical implementation of the alarm coincidence. These persons need not necessarily belong to an experiment which providing alarms to the coincidence server (or even existing). Each experimental collaboration will designate such members via its advisory board representative.

- **Role:** Working group members contribute to the technical discussions, decisions and implementation. They also act as liaisons to their experimental collaborations.

- **Access:** Working group members will have access to coincidence code in test areas on shared machines, and can modify test versions, but do not have access the the actual running processes. They have no access to real experimental alarm input information from the experiments.

- **Requirements:** Working group members must agree to take reasonable security precautions using standard tools when connecting to the coincidence server machines.

3.2 The Subgroup

The subgroup will be a subset of the working group, with full access to all information, and correspondingly stricter privacy rules.

- **Membership:** The subgroup will consist of at least one member per experiment which is actively providing alarms to the coincidence server machines. To keep this group small, there should be a compelling reason to have more than two members from any given experiment. Each experimental collaboration will designate such members via its advisory board representative.

- **Role:** Subgroup members will authorize releases of the software, check health of alarm input and output and maintain the actual running versions of the coincidence software.

- **Access:** Subgroup members will have access to running server code areas, and to the complete alarm information of all experiments providing input to the coincidence server.

- **Requirements:** Subgroup members agree to keep *all* individual experiment alarm information (alarm rate, alarm times, alive/dead status, etc.) private, at both a formal and informal level. Individual alarm information can be discussed within the subgroup, for the purpose of technical decisions, but not outside.

In particular:

- Publication or dissemination in any way of experimental alarm input information is strictly prohibited. Alarms from other experiments may *not* be discussed with one's own experimental collaborators (including spokespeople), or anyone outside the subgroup. This includes presentations at conferences, email, word of mouth, etc.
- Divulging passwords to the private areas to anyone outside of the subgroup is of course prohibited.
- Subgroup members must take careful security precautions when connecting remotely to any of the server machines.

3.3 The Advisory Board

- **Membership:** The advisory board will consist of at least one senior member (for instance, spokesperson) per experimental collaboration actively sending alarms to the coincidence.
- **Role:** The advisory board will be responsible for deciding high-level inter-experiment security and data exchange issues. They will designate subgroup members and authorize data exchange agreements.
- **Access:** Same as the working group.
- **Requirements:** Same as the working group.

4 Data exchange:

At present, only the information needed for a simple coincidence will be exchanged by initial automated datagram, i.e. experiment identification and time of the first event in the detected burst.

This data exchange agreement is expected to evolve; in particular, refinements of sensitivity, and triangulation calculations may require the exchange of more than the minimal information noted above (see the workshop summaries, [3]) The next step, although it is not yet implemented, will be to for all experiments to exchange alive-or-dead information when a coincidence between at least two experiments is determined.

A new document will be produced when necessary, to be approved by the advisory board.

References

[1] http://hep.bu.edu/~snnet/gcnet.ps

[2] http://hep.bu.edu/~snnet/poster.ps

[3] http://hep.bu.edu/~schol/workshop/workshop_summary.html