Data Management Plan

1 Types of Data

This project will generate the following types of data:

- Engineering drawings and circuit diagrams for custom printed circuit boards.
- Field programmable gate array (FPGA) firmware blocks and compiled BIT files.
- Monitor and control (M&C) software and implementations of radio frequency interference (RFI) excision algorithms.
- Laboratory- and telescope-generated high-level test data (e.g. digitized raw voltages and detected spectra).
- A database of common sources of RFI and their characteristics.
- Technical documents, memos, and publications.
- Educational curricular materials.
- Educational evaluation data.

2 Data Formats and Standards

We will use common data formats wherever possible to facilitate broad dissemination and use of our work. This will include:

- Engineering mechanical drawings and block diagrams created with AutoCAD and/or Autodesk Inventor. Printable circuit board layouts will generate standard Gerber files that are used by manufacturing companies. We will use the Eagle printable circuit board diagram layout program to draw schematics and design boards.
- FPGA designs will generate BIT files and BOF files that are common in CASPER.
- C++ and Python for M&C software; Python, C++, CUDA, and Verilog HDL and Simulink for RFI excision algorithms.
- High-level test data will primarily be in the FITS format. SDFITS is an implementation for spectral line data supported by GBO; PSRFITS is an implementation for pulsar data supported by numerous third-party software packages. Voltage data will in the GUPPI RAW format, which is used for other CASPER-based back-ends and supported by numerous third-party software packages.
- SQL will be used for the RFI database.
- Documents, including educational materials, will be written in portable formats such as PDF.
- Educational evaluation data will be stored using spreadsheets.

3 Usage and Distribution Policies

A public-facing project web page will be hosted by GBO for communicating results of our work to a scientific, technical, and general audience. It will be updated with status reports upon the completion of key milestones, and will include links to publicly-available data products. An internal wiki page will be hosted by GBO for recording meeting minutes, internal project memos, and preliminary data products.

- Engineering mechanical drawings and circuit board layouts will be placed on GBO GitHub repositories.
- We will distribute all resources that enable the integration of new hardware into the CASPER tool-flow through the official CASPER GitHub repository
- Source code and firmware for RFI excision algorithms will be placed on GBO GitHub repositories.
- Test data may be many tens to hundreds of gigabytes in size, and will be hosted on spinning-disk at GBO. Data generated during initial testing and debugging will be retained for use by the project team. Final validation and verification data will be made publicly available. High-level descriptions and meta-data of final validation and verification data will be published on the public project web page. Final validation and verification data sets will be made available via FTP.
- The RFI database will be publicly accessible via a GBO-hosted web page. Community contributions will be welcome with editing privileges granted on a case-by-case basis via coordination with the PI and the GBO computing division.
- Final commissioning reports, technical publications, and curricular material will be made freely available via the public project web page.
- Since evaluation data will not be identified with particular individuals, institutional review board approval is not required and the pre- and post-data will be available upon request by GBO.

4 Data Archiving

GBO will curate and archive data. Documentation, firmware blocks and BIT files, test data, public databases, and public and internal web pages will be stored locally on spinning disks that undergo regular back-up as part of normal GBO computing division activities. Local revision control repositories will be used to track changes in firmware and software.