

Data Management Plan

The data associated with the research project will be systematically managed. The team has multiple backup servers to protect our research findings, and publicly available internet resources to share our results. All aspects of the research will be carefully tracked, stored, and published. The work detailed in the preceding proposal can be anticipated to produce three broad categories of data: computer software, physical devices, and optical characterization measurements. The computer software category includes not only the filter optimization subroutines that will be produced, but also the scripting written to control the laboratory equipment used in the characterization of the fabricated photonic circuitry. The physical devices category includes the final filter unit cell, as well as the prototype optical circuitry generated during its development. The optical characterization category includes spectral measurements of the fabricated devices, as well as the associated metadata.

The algorithm development progression will be logged through both handwritten research notebooks as well as digitally generated documents. To ensure the safety of the data, we will use the UCSD research group's existing file server to periodically backup the materials. A Structured Query Language (SQL) database will be created to track the digital documents. The completed filter design toolbox will be made available by enacting the Release to Public policies of University of California, San Diego. We plan to package our algorithm in a MATLAB toolbox as well as a self contained software complete with an user interface.

All of the computer code produced during the project will be written using the latest version of MATLAB. Code will be developed using volume shadow copy technology, which will allow the recovery of prior iterations for quality control. The spectral measurement data will be written to MATLAB cell arrays that also include the measurement date and time, duration, and a unique identification number. Subroutines will be produced that allow the effortless extraction of this data both graphically, and in raw matrix form.

The results of the research performed under this proposal will be disseminated primarily through publication in research journals and conference presentations. All of the computer software and optical characterization measurements will be available to interested parties upon request, and will be transmitted electronically via e-mail.

All electronic data generated by proposal research will be redundantly archived. Locally, the laboratory has a secure server on which all information is stored. The server hard drives are set up in a RAID that is capable of full recovery even in the case of multiple simultaneous disk failure. Additionally, the server drives are backed up on an independent server operated by the electrical engineering department. This will allow full recovery of data in the even of catastrophic failure of the local laboratory server. Physical samples will be labeled and stored in a designated area of the measurement laboratory. All of these systems will be in place for the 3 year minimum proscribed by the NSF, and the foreseeable future following that.