# Engineering Student Technology Committee

## College of Engineering
**Colorado State University**

The Engineering Student Technology Committee (ESTC) invites proposals from students, faculty, and staff for technology related equipment to enhance the student educational environment in the College of Engineering at CSU. Each year, the ESTC allocates funding for strategic projects that will have a near-term benefit to students. This year, the committee is soliciting proposals in the $5K - $10K range. Proposals must be primarily for equipment and have a direct benefit to the educational mission of the college. Please review the Charge for Technology (CFT) manual for permissible use of CFT funds:
http://ucft.colostate.edu/aspx/www.ucft/pdf/cftmanual.pdf.

The ESTC is particularly interested in intra-departmental proposals or proposals that benefit a large cross-section of students. Partnerships with the ESTC that fund projects beyond the limitations of the CFT are especially compelling. Note that the committee is not, in general, interested in funding projects that are specific to a particular research group or that affect only a small number of students. To submit a project proposal, please complete this form and send it as an e-mail attachment to priedo@rams.colostate.edu by March 29th for full consideration.

**1. Title of Proposal:**    Atmospheric Science LDM and data server upgrade

**2. Proposal Participants:**

*Primary Contact for Proposal*

Name:        David Duncan          E-Mail: dduncan@atmos.colostate.edu

Department/Major:    Atmospheric Science

*Circle One:*        (**Student**)        **Staff**        **Faculty**

*Additional proposal participants:* Graduate students Nick Davis and Adam Rydbeck, Assistant Professors Chris O'Dell and Russ Schumacher

**3. Proposal Abstract (limit to 100 words):**

The Local Data Manager (LDM) in ATS requires an upgrade, and we propose to include a large amount of disk storage with the server upgrade. The new storage will house common weather and climate datasets as well as forecast data that disappears unless archived. This upgrade will complement the recently renovated weather lab and markedly increase its capabilities. Greater storage capabilities will primarily facilitate student classroom learning while also permitting greater collaboration between students and different research groups. We ask for half the cost, with the remainder shared between a pending grant with Unidata, departmental funds, and student tech fee funds.

## 4. Proposal Budget

*List of items to be purchased and cost*

| 1 | iSCSI SAN, dual hot-swappable controllers, 4GB cache per controller; four GbE ports (2 per controller); USB ports; dual hot-swappable power supplies, rack mount kit; SANDR mgmt suite: snapshots w/deduplication (256 per LUN), unlimited LUNs w/dynamic expansion, support for site-to-site replication, SNMP alerts, removable disk & tape backup features. 2 yr warranty w/Express Depot service. 16 3.5" Bays, 3U |
|---|---|

$7,475.00

| 16 | 3TB SATA, 7.2K, 3.5" with Interposer board |
|---|---|

$7,872.00

| 1 | Fedex 2 Day Air Service to ZIP Code 80026 |
|---|---|

$283.00

**TOTAL: $15,630.00**

*Dollar or percentage amount requested from ESTC:* **$7,815 (50%)**

## 5. Full description of proposal:

The Atmospheric Science department retrieves real-time weather data via a Local Data Manager (LDM) and stores it locally for use in courses and weekly, student-led public weather discussions. The LDM provides observational and forecast data to the recently renovated weather lab, a project funded largely by student fees and completed last summer. The weather lab includes 8 high-definition monitors and a high-end PC that delivers content to these monitors; the lab holds weekly, public weather discussions on Fridays and is used in synoptic and mesoscale meteorology courses (ATS 640 and 641) taken by all graduate students.

Upgrading the LDM will have many benefits for students and the department as a whole, as it will greatly improve the functionality of the weather lab. However, the greatest benefit for students will come from the increase in storage capacity proposed. A major obstacle to students beginning their careers is downloading data from various agencies, which is both time-consuming and, in the case of high-resolution data sets, storage-prohibitive on personal computers (e.g., the North American Regional Reanalysis dataset is 11TB alone). The proposed server will centralize access to the most commonly used products and give students fast, local-network access to the largest datasets. It will be configured such that its data storage can be easily mounted to any desktop machine in the department, and thus used as if it were a "local" hard drive. This will enable wider use of real-time data for everyone on the department's network and make collaboration simpler.

Centralized access to common datasets will greatly benefit students in the classroom as well. Numerous courses, for example ATS 655: Objective Analysis, emphasize statistical analysis techniques that would be enhanced by the use of real-world data, aiding to blend theory with modeled and observational data actually used in research applications. With ready access to the real-time datasets that could be read into any number of software packages, and a local server to conduct some of the data processing, lab assignments could be done with dynamic digital datasets instead of static images. In all, this will enable more "hands-on" experience and experimentation with different types of data in the classroom, better preparing students for their own research and future careers.