

Engineering Student Technology Committee

<http://www.engr.colostate.edu/ESTC>

College of Engineering

Colorado State University

1. Title of Proposal: Prox Card Readers

2. Proposal Participants:

Primary Contact for Proposal

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Department/Major: Engineering Network Services _____

Check One: **Staff**

Additional proposal participants

Name: CJ Keist _____ E-Mail: cj.keist@colostate.edu _____

Department/Major: Engineering Network Services _____

Check One: **Staff**

This proposal has the support of the following student organizations:

American Institute of Chemical Engineers (AIChE), American Society of Mechanical Engineers (ASME), CSU IEEE, Engineering College Council (ECC), Eta Kappa Nu (HKN), Pi Tau Sigma (PTS), Society of Hispanic Professional Engineers (SPHE), and Triangle Fraternity.

This proposal has the support of the following individuals:

Dr. Xinfeng Gao (Assistant Professor, Mechanical Engineering), and Negar Mosharraf Ghahforkhi (Graduate Student, Electrical and Computer Engineering).

3. Proposal Abstract (limit to 100 words):

We ask the ESTC for one-time funds to convert all of the current swipe card readers to proximity (prox) card readers.

4. Proposal Budget

List of items to purchase and cost of each

4 panel modules @ \$3,500 each: \$14,000

31 readers @ \$2,050 each: \$63,550

TOTAL ESTIMATED COST: \$77,550

Dollar or percentage amount requested from ESTC: \$77,550

5. Full description of proposal:

The current swipe card reader system is a homegrown system developed in 1993 by ENS to provide restricted-areas access to Engineering students. This system has been used successfully for many years before a proximity (prox) card reader system was developed and standardized at CSU. New construction projects (such as the Scott Bioengineering building and Advanced Beam Laboratory) and remodel projects (such as the Engineering Research Center) have standardized on the prox reader system.

The prox reader system is fully supported by CSU Facilities. ENS will cease supporting the swipe reader system once we have replaced all swipe card readers with prox card readers.

The problems with the swipe reader system, which we can solve by replacing it with the prox reader system, include:

- Unreliability. Some of these systems are literally held together only with electrical tape. The installations are in some cases worn out and physically damaged. Some card readers are an older version that causes frequent interruptions in service. Some card readers unexpectedly freeze, requiring that staff manually reset them.
- Planned obsolescence / replacement. The swipe card readers by their very nature degrade with each use. This means that not only do they start becoming unreliable after a time; they must be replaced (generally within 5 years). When we replace a defective reader, we must purchase a new unit. The prox readers have no moving parts and thus do not degrade. They are only replaced after they fail, which is rare. When one is replaced, we do not bear the cost. In addition, students' ID cards degrade after each swipe, necessitating student expense replacing ID cards from time to time.
- ID card replacement. When a student obtains a replacement ID card from the RamCard office, the prox reader system is automatically updated, with minimal inconvenience to the student. Our swipe reader system, on the other hand, must be manually updated. ENS is not notified of a new card, so the student must contact ENS to have a new card updated in the swipe reader system. Many students do not know this, which leads to frustration for the student.
- Dual systems. Because the college now has two forms of card reader entry, this has caused confusion with students. That is partly why we will ultimately convert entirely from swipe to prox reader systems.
- Cost of support. Currently, the ENS Help Desk, staffed by student employees, handles over 60 routine card reader requests each week, costing the CFT about \$4,500 annually in wages. Beyond that, we estimate that managing and troubleshooting the system (servers and readers), which both ENS student employees and staff do, costs about \$2,700 annually. Total cost in labor to support: about \$7,200. There is no annual maintenance cost for the prox reader system.

ENS has already begun planning, with CFT card reader replacement budget, to convert all existing swipe card readers to prox card readers. If we only used replacement budget funds, this would take 4-5 years.

ENS would like to ask the ESTC to fund the one-time cost of converting all of the current swipe card readers to prox readers, for a total estimated cost of \$77,550. This cost includes some infrastructure expenses that would make future prox reader installations less expensive (see below).

Each prox card reader is a separate project for CSU Facilities, thus, we can only estimate expenses until we receive firm quotes. However, based on previous projects, we estimate a cost of \$3,500 per panel module and \$2,050 per reader. We need 4 panel modules and 31 readers. These numbers do not include projects already in progress, funded from regular card reader replacement budget.

Each panel module covers eight readers. With four panels scheduled for installation already, and four additional, this gives us the capacity for 64 readers. Many quotations for prox reader installations include the cost of the panel, if there is not an existing one with room on it for another reader. Building out this infrastructure in the Engineering and Glover buildings should allow us the capacity for more readers, which would decrease the overall cost of future installations in those areas.

List of swipe card readers we would convert to prox card readers:

Panel	Reader (Door)
Engr A-Wing	A103Q EWB office
Engr A-Wing	A5 ASME lounge
Engr A-Wing	A7 Geoenvironmental Lab
Engr A-Wing	A8 Advanced Materials Lab
Engr A-Wing	A9 Grad Geotechnical Lab
Engr B-Wing	B10 MECH Teaching Lab - west
Engr B-Wing	B107 Gao grad student offices (ME)
Engr B-Wing	B109 Applied Electromagnetics Lab - east
Engr B-Wing	B110 Systems & Control Lab
Engr B-Wing	B111 Dynamic Systems & Controls Research Lab
Engr B-Wing	B9 EMEC
Engr B-Wing	BC106 Infill - west
Engr C-Wing North	C21 Articulated Motion (ArM) Lab
Engr C-Wing South	B10 Hydrologic & Water Resources grad offices - east
Engr C-Wing South	B6 RAM Lab
Engr C-Wing South	BC106 Infill - east
Engr C-Wing South	C1 Pasricha/Siegel grad student offices (ECE)
Engr C-Wing South	C105 Linear Circuits Lab (incl. C107 access)
Engr C-Wing South	C15 The Clean Room
Engr C-Wing South	C17 Microwave Systems Lab
Engr C-Wing South	C203 Networking & Communications Lab
Engr C-Wing South	C207 Real-Time Systems Lab
Engr C-Wing South	C207A Communications Lab
Engr C-Wing South	C211 Chandra/CASA grad student offices (ECE)
Engr C-Wing South	C213 CIVE Lab
Engr C-Wing South	C3 Laser Remote Sensing Lab
Glover 146	146 CBE Lab
Glover 146	146C CBE Car work space
Glover 212	122
Glover 212	140 CIVE Lab
SimLab	SimLab - West Entrance