A Second Life for Laptops:  
Upgrading Laptops for Checkout

Proposal to the Technology Advancement Committee  
College of Agriculture

Prepared by:  
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Supporting Departments of Entomology, NREM, Plant Pathology

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Justification for Funding
The balance of the NREM student fee account will be spent on replacement laptops for the NREM laptop cart project. The ENT student fee account was used to establish a concurrent licensing program to provide access to often-used software and does not have the funds needed for this proposal. Therefore we are requesting funds from Ag-TAC.

Purpose
The purpose of this project is to expand laptop checkout services to students in the College of Agriculture, departments of Entomology, Natural Resources Ecology and Management, and Plant Pathology. Students check laptops out when they have a need for mobile computing including giving presentations, working in groups, and accessing site-licensed software outside of a traditional computer lab. In an effort to wisely use funds already invested from student fees, this project upgrades laptops that are being replaced in the NREM laptop cart project instead of sending them to surplus. (The NREM laptop cart is used in classrooms and is not available for checkout.)

General Student Benefit
This project will focus on a subset of 300 students: those in Entomology, NREM, and Plant Pathology. We will include both undergraduate and graduate students. Students are able to check out a laptop that contains all of the site-licensed software that is offered through the ENT/NREM IT Center. For example:

- Adobe Photoshop CS5.5
- Adobe Acrobat X Pro CS5.5
- Adobe Illustrator CS5.5
- Adobe InDesign CS5.5
- SigmaPlot 12
- EndNote 4

Innovation and New Technologies
The proposed upgrade uses new technology to give new life to older hardware. We recognize the fact that modern computers have a longer usable lifespan, especially with
the new affordibility of solid state drive technology. The Dell Latitude D620 has a SATA drive bus and a 64-bit-capable processor (2.16 GHz Core 2 Duo T7400). That means that the original hard drive can be removed and replaced with a modern solid state drive and that the processor can access 4GB of RAM memory for 64-bit Windows 7. We propose to do both upgrades and replace batteries at a total cost of $400 per machine (see budget for details). Compare this to the purchase cost of a new Dell Latitude E6410 for $1367.

The effect of the upgrade on the speed of the laptop is shown in Figure 1. By virtually eliminating the primary performance bottleneck (disk random access seek time) the upgraded configuration is twice as fast as the original laptop.

![Figure 1. Boot time in seconds. The upgraded Dell Latitude D620 is more than twice as fast as the stock configuration. Lower bars are better.](image)

**Facilities**

Laptops will be available for checkout in 407 Science II (staffed by ENT/NREM IT) and 351 Bessey Hall (staffed by PLP administrative staff).

**Integration and Sustainability**

This project consolidates three separate laptop checkout programs that currently exist. It standardizes on a single model of laptop. And it provides an example of the university using hardware throughout its useful life rather than “buying new when used will do.”
Support and Maintenance

We will hold some of the laptops back to be used to rotate in when laptops break and to use for parts. This obviates the concern that the laptops are no longer under warranty.

Cost Efficiency

This proposal saves $29,010 over the purchase of new laptops. It also provides access to site-licensed software without additional cost to students. Most site-licensed software cannot be installed on non-university owned laptops, so this represents a cost savings for students who might have to purchase the software on their own.

Support and Maintenance

Support will be provided by the ENT/NREM IT Center, which has two full-time staff (John VanDyk and Christian Charbonneaux) as well as student employees.

Budget

Our total request from the Ag Technology Advancement Committee is $11,250. ENT/NREM has already borne the cost of licensing software ($13,234).

Table 1. Full itemized budget (all items are classified as Hardware).

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>4GB RAM</td>
<td>30</td>
<td>71</td>
<td>2130</td>
</tr>
<tr>
<td>Intel 320 SSD</td>
<td>30</td>
<td>169</td>
<td>5070</td>
</tr>
<tr>
<td>Battery</td>
<td>30</td>
<td>135</td>
<td>4050</td>
</tr>
</tbody>
</table>

$11,250

Table 2. Alternate budget, showing cost of buying new.

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dell Latitude E6410</td>
<td>30</td>
<td>1367</td>
<td>$41,010</td>
</tr>
</tbody>
</table>