Manufacturing

Safety Interlock System for WSE Machine Shop

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Problem Statement: Develop a tamper-evident system that **prevents users from operating equipment they are not trained to use** and automatically tracks equipment usage.

Using the Gatekeeper

1. 

Present your finger.

2. 

If trained, pick the budget to charge.

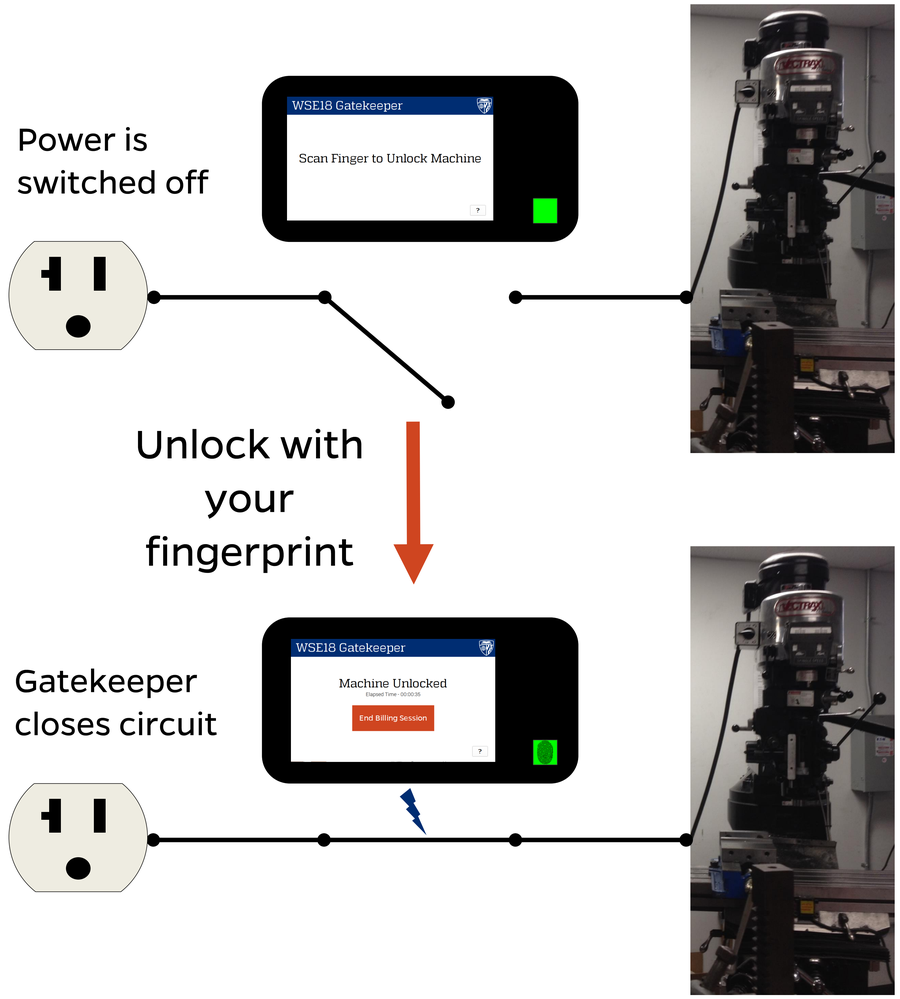
3. 

Use the machine.

4. 

When finished a summary is displayed.

What the Gatekeeper Does



Gatekeeper Performance

User Recognition Accuracy

In 5 weeks of user testing
with over 100 hours of usage billed
50 users registered
342 fingerprints stored
and 152 machine sessions
...exactly **1** user was misidentified...once.

Information Security

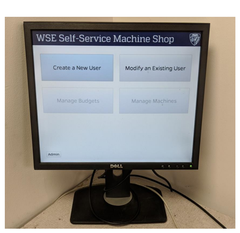
4 teams of volunteer hackers
in 2 months of penetration testing
found **1 way** to read traffic...
0 ways to alter data...
and 0 ways to steal sensitive information

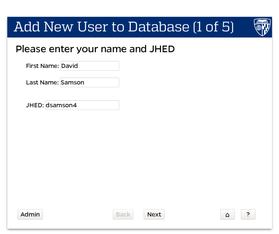
Reliability and Extensibility

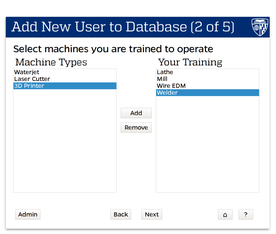
Supports **arbitrary numbers of machines** with component costs **less than $430.**
Tested for 5 weeks of continuous use interrupted only for upgrades.
End users **proved ability to assemble new units from documentation.**
Project installed Gatekeepers **on every billed machine** in the Student Shop

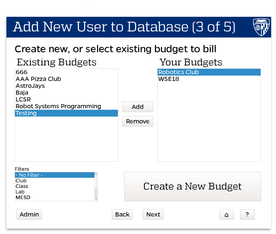
The Kiosk

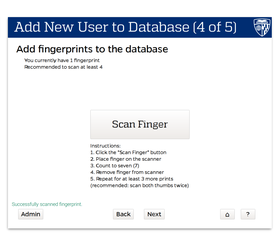
Create/Manage Users

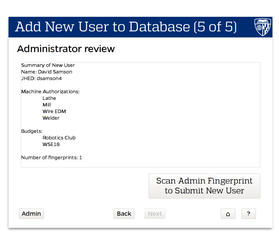




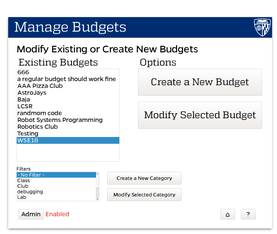


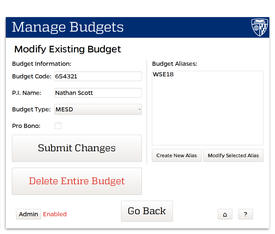




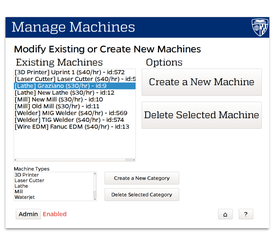


Manage Budgets





Manage Machines



The **Kiosk** facilitates creating and modifying new users, budgets, and machines in the system.

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