An ongoing project whose goal is to investigate, encourage, and develop open-source technologies for use in educationally focused robotics applications. Though still in the investigation phase, two projects are under development, the mouse positioning system (MPS), and EL RowCon, the Embedded Linux Mobile Rowbot Controller.

**Educational Robotics Technologies should be**
- Low cost
- Robust
- Flexible

**What the Open Source Software(OSS) Development provides:**
- Global development community
- Increased reliability
- Rapid development
- Decreased cost

MIT’s HandyBoard

“RowBotics” projects like EL RowCon, and the MPS will showcase open source software's powerful role in educational robotics, in all aspects, teaching, learning, utilization, and development.

What tools and resources can we use to combine Open Source Software, Education, and Robotics?

http://elvis.rowan.edu/~ohara/rowbotics/
The Mouse Positioning System (MPS)

• Using computer mice as inexpensive positioning devices

```
void onMovement(MPS *m);
int main()
{
RPI origin;
Mouse mouse("/dev/ttyS0", "mman");
MPS mps(&mouse, "calibrationInfo.txt", origin);
mps.set_updater(onMovement);
mps.start();
while(1)
{
  usleep(100);
  return 0;
}
void onMovement(MPS *m)
{
cout << "(t, x, y, z, heading)" << endl;
cout << m->position() << endl;
}
```

Limitations of using a single mouse for 2 Dimensional positioning information

\[
\begin{align*}
(d_x, d_y)_\text{Mouse} &\rightarrow (d_x, d_y, d_z, d\theta)_\text{World} \\
 d_z_W &= c ; d\theta_W &= f (d_x_M) \\
 d_x_W &= g (d_y_M, \theta_W) \\
 d_y_W &= h (d_y_M, \theta_W)
\end{align*}
\]

The Embedded Linux Mobile RowBot Controller (EL RowCon)

• An inexpensive yet powerful mobile robot controller based on an embedded Linux software system

Two different views of EL RowCon