Atom for Embedded Linux Hackers and the DIY Community

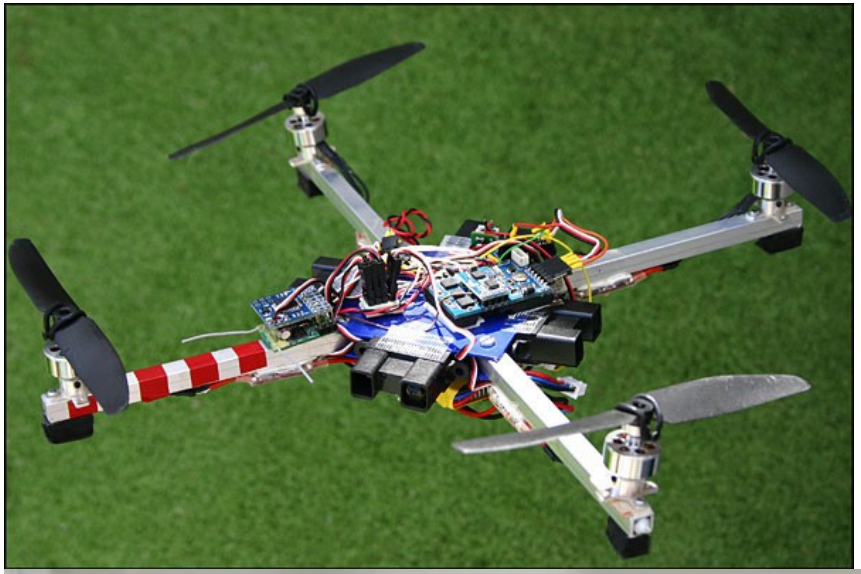
Scott Garman
Intel Open Source Technology Center

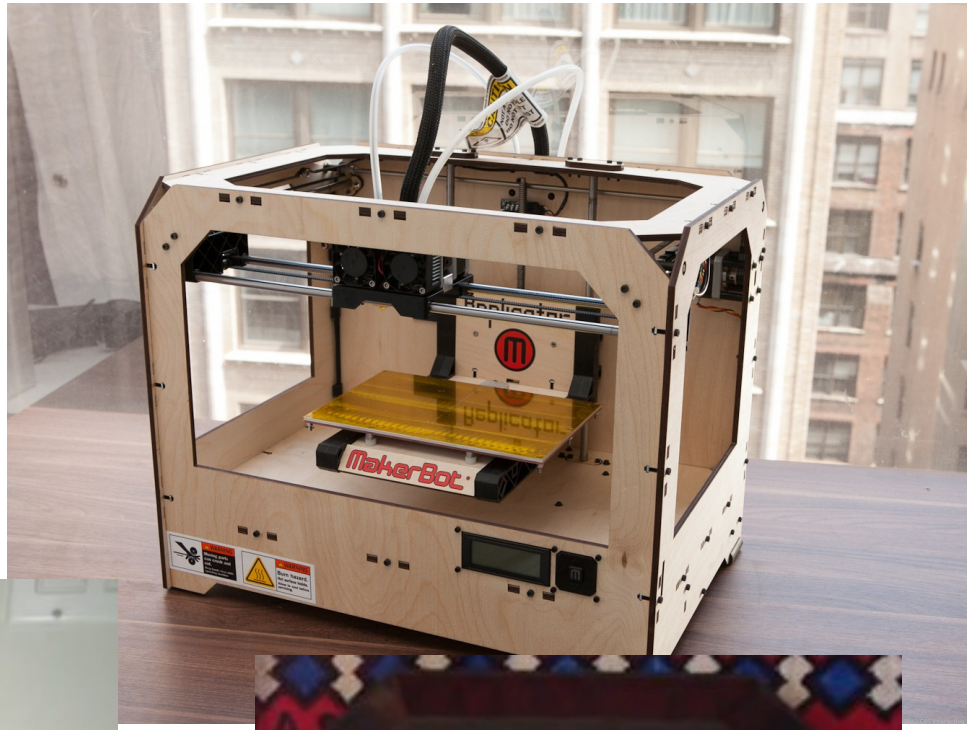
ELC ● San Fransisco ● 20 Feb 2013

Hi, I'm Scott, and I like to make things

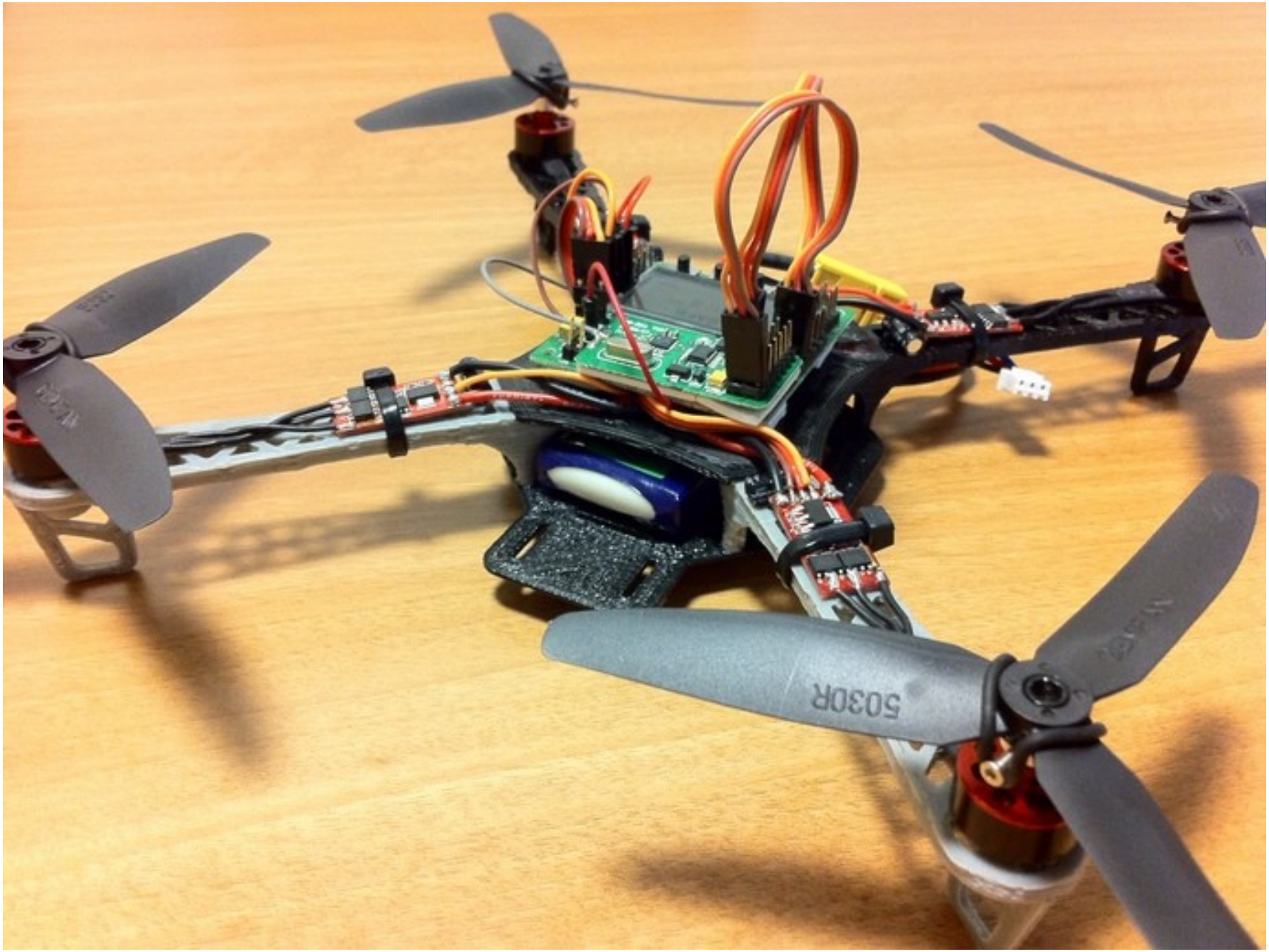
It's a great time to be a hacker

So many toys, so little time




MakerBot


NYC CNC


5030R

The Next Big Thing is going to come from YOU

Introducing a new board, with new potential

${animal}board.org - Mozilla Firefox
File Edit View History Bookmarks Tools Help
${animal}board.org
animalboard.org
DuckDuckGo
${animal}board.org
beagleboard.org
pandaboard.org
leopardboard
hawkboard.org
craneboard.org
eagleboard.org

${animal}board.org

beagleboard.org

pandaboard.org

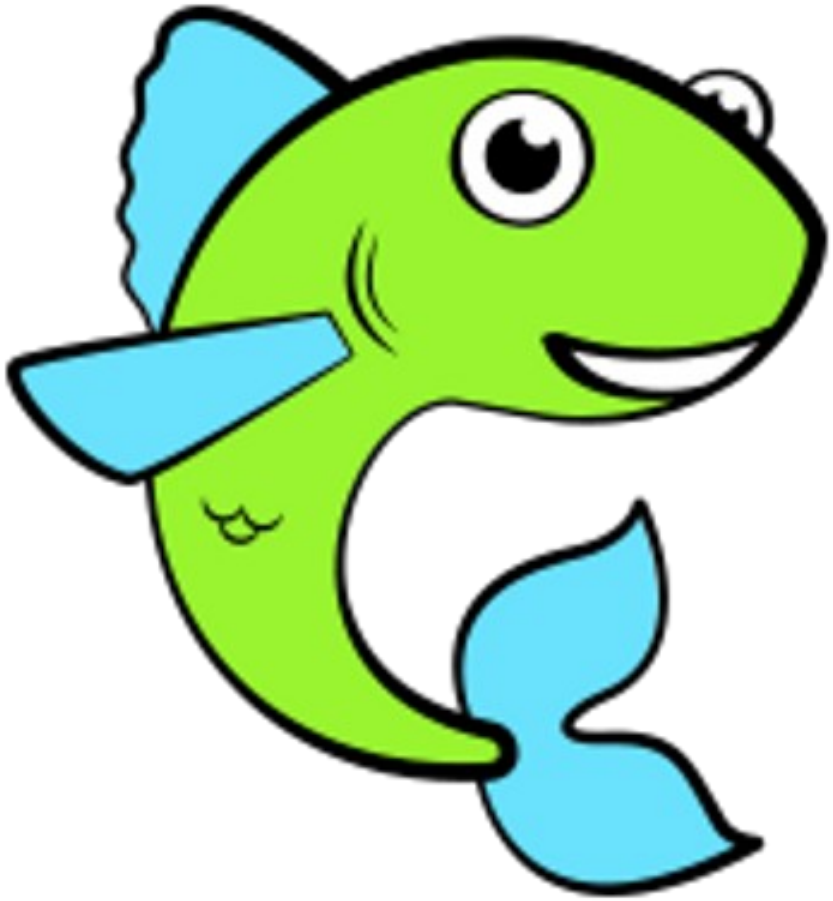
leopardboard

hawkboard.org

craneboard.org

eagleboard.org

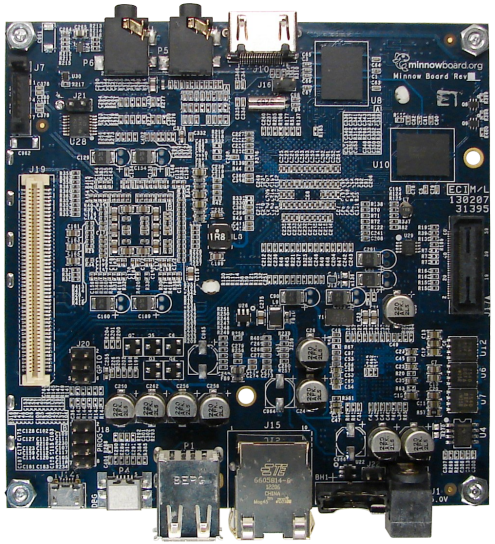
Why are there no fish?

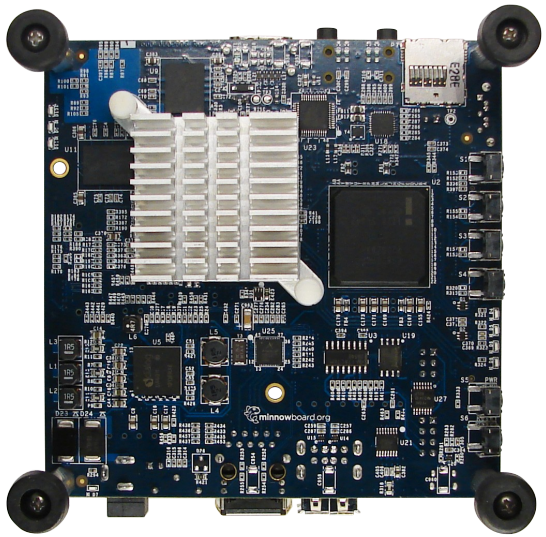



minnowboard

Meet the MinnowBoard

The MinnowBoard is an Intel® Atom™ - based board which introduces the Intel Architecture to the small and low cost embedded market for the developer and maker community. It has exceptional performance, flexibility, openness and standards for the price.





Note: the above photos are of a prototype revision of the board.

MinnowBoard Design Goals

The MinnowBoard is an Intel® Atom™ - based board which introduces the Intel Architecture to the small and low cost embedded market for the developer and maker community. It has exceptional performance, flexibility, openness and standards for the price.

minnowboard

MinnowBoard Performance

- **Intel® Atom™ 1.0 GHz CPU with Hyper-Threading and Virtualization technology**
- **Generous I/O powered by PCI Express:**
  - SATA
  - Gigabit Ethernet
- **UEFI firmware with Fast Boot**

MinnowBoard Flexibility

- **Affordable Intel® Atom™ platform**
  - $199 MSRP
- **Scales up to higher workloads**
- **Small form factor**
  - 4”x4”
- **Extensive firmware capabilities**
- **Stackable and Expandable via MinnowBoard Lures**
  - Add displays, wireless, more I/O options

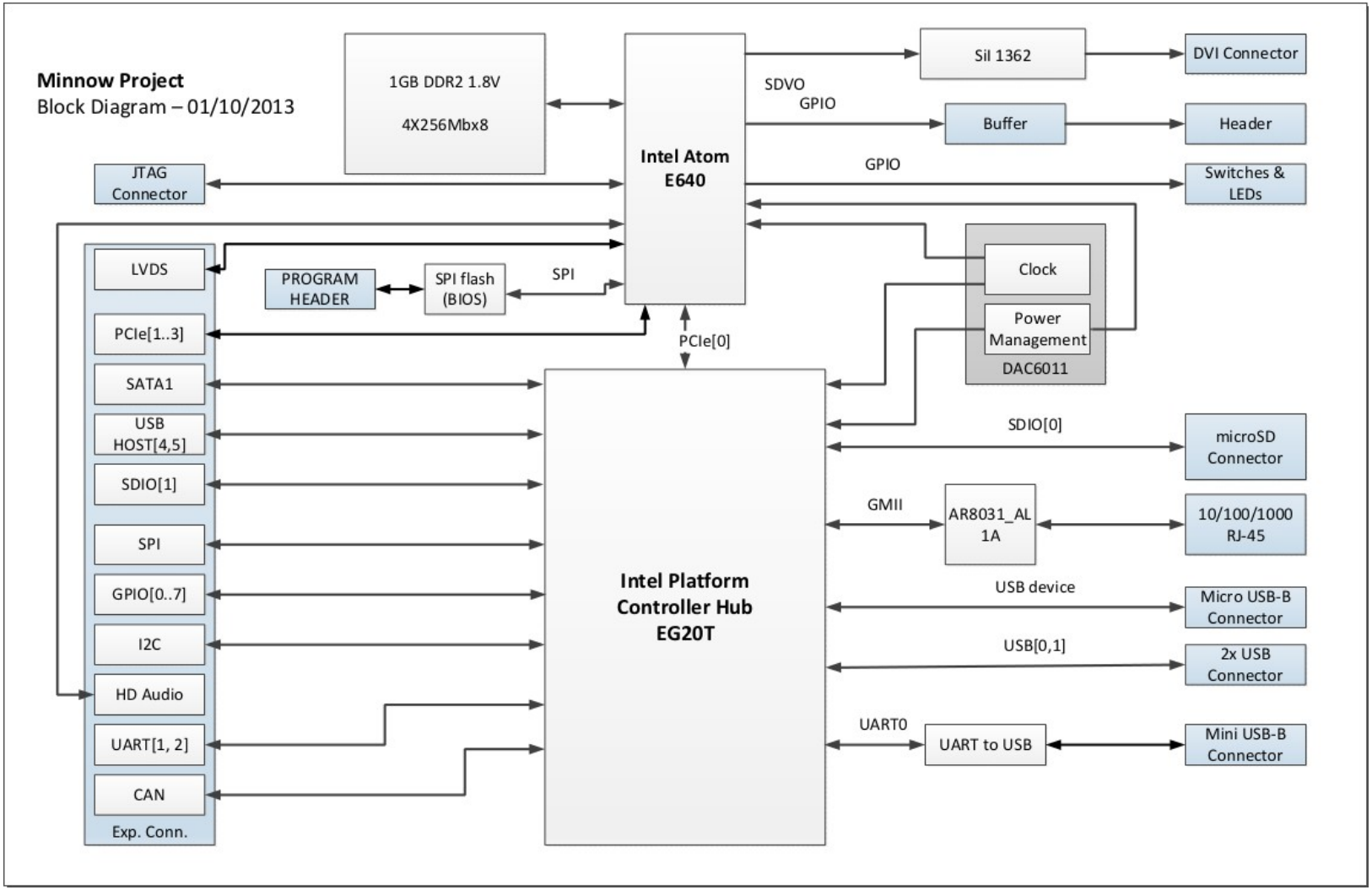
MinnowBoard Openness

- Open Source hardware platform
- Customizations possible without signing NDAs
- Open Source Angstrom Linux distribution – Yocto Project compatible
- Open Source MinnowBoard Lure designs

MinnowBoard Standards

- X86 compatibility
- PCI Express, SATA, USB – Intel Architecture standards
- SPI, I2C, CAN, GPIO – Embedded system standards
- Angstrom distribution is Yocto Project Compatible
- UEFI Firmware

MinnowBoard Block Diagram



MinnowBoard Features - Hardware

- **Atom E640 32-bit CPU @ 1.0 GHz**
  - Intel Hyper-Threading and Virtualization Technology
- **1 GB DDR2 RAM**
  - Plenty of RAM for memory-intensive applications
- **PCIe Powers SATA, Gigabit Ethernet**
  - Maximum I/O performance
- **I2C, SPI, GPIO, SDIO, CAN**
  - All the usual goodies for embedded device communications
- **microSD Card, USB cable, power adapter included**
  - Gets you started with everything you need right out of the box

MinnowBoard Features - Software

- **Angstrom Distribution**
  - Angstrom is Yocto Project Compatible
- **Yocto Project Board Support Package (BSP)**
  - Optimized for hardware features
- **UEFI Development Platform**
  - Modern, standards-based firmware environment
  - Develop & debug your own firmware
  - Fast Boot capability

MinnowBoard Benefits

Performance

- **Intel® Atom™ CPU with Hyper-Threading and Virtualization technology**
- **Generous I/O powered by PCI Express:**
  - SATA
  - Gigabit Ethernet
- **UEFI firmware with Fast Boot**

Flexibility

- **Affordable Intel® Atom™ platform**
- **Scales up to higher workloads**
- **Small form factor**
- **Extensive firmware capabilities**
- **Stackable/Expandable via MinnowBoard Lures**

Openness

- **Open Source hardware platform**
- **Customizations possible without signing NDAs**
- **Open Source Angstrom Linux distribution – Yocto Project compatible**
- **Open Source MinnowBoard Lure designs**

Standards

- **X86 compatibility**
- **PCI Express, SATA, USB – Intel Architecture standards**
- **SPI, I2C, CAN, GPIO – Embedded system standards**
- **Angstrom distribution is Yocto Project Compatible**
- **UEFI Firmware**

MinnowBoard Community

minnowboard.org

- Documentation, Getting Started Guide
- Wiki, Video Tutorials
- Mailing List and #minnowboard IRC channel
- Community News and Project Examples
- Download Schematics
- Buy the MinnowBoard and Lures via Distributors

Coming Spring 2013

- Visit our website at www.minnowboard.org and be the first to know when the board is available for purchase
- @minnowboard on Twitter
- MinnowBoard on Google Plus
- Check us out at the ELC demo reception this evening!

minnowboard.org