MICROECONOMICS FOR MAKERS

Chris Anderson
Open Hardware Business Model

• “Give away the bits, sell the atoms”

• Charge 2.6x BOM

• Keep ahead of cloners by innovating faster, supporting better

• “90-10” Rule: 90% the performance of commercial products at 10% the price

• Democratize the technology: low prices = high volume = high innovation.
The Hierarchy of Reward
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First accepted commit
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First accepted commit

T-shirt
The Hierarchy of Reward

“Sustained Contribution Award” by team leader

First accepted commit

T-shirt
The Hierarchy of Reward

1. T-shirt
2. Coffee mug & hardware discount
3. "Sustained Contribution Award" by team leader
4. First accepted commit
The Hierarchy of Reward

- T-shirt
- Coffee mug & hardware discount
- "Sustained Contribution Award" by team leader
- Accepts role as a project leader
- First accepted commit

Sunday, October 7, 12
The Hierarchy of Reward

- First accepted commit
- "Sustained Contribution Award" by team leader
- Accepts role as a project leader
- Dev team member & free hardware
- Coffee mug & hardware discount
- T-shirt
The Hierarchy of Reward

- First accepted commit
- "Sustained Contribution Award" by team leader
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- T-shirt

Core Team leaders
The Hierarchy of Reward

- First accepted commit
- "Sustained Contribution Award" by team leader
- Accepts role as a project leader
- Core Team leaders
- Coffee mug & hardware discount
- Dev team member & free hardware
- Trip to dev meeting
The Hierarchy of Reward

First accepted commit

“Sustained Contribution Award” by team leader

Accepts role as a project leader

Core Team leaders

Team leaders who have shipped a major project

Trip to dev meeting

Dev team member & free hardware

Coffee mug & hardware discount

T-shirt
The Hierarchy of Reward

- **T-shirt**
- **Coffee mug & hardware discount**
- **Dev team member & free hardware**
- **Trip to dev meeting**
- **Equity**

- **First accepted commit**
- **“Sustained Contribution Award” by team leader**
- **Accepts role as a project leader**
- **Team leaders who have shipped a major project**
- **Core Team leaders**

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OSH advantages

• Free and fast R&D. Unbeatable economics.
• Lower regulatory barriers
• Natural business model
• Product development done by customers

But with a few exceptions (RepRap, Arduino, etc) most of the "derivative innovation" advantages have been on the software side
THE PRINCIPLE POLITICAL CONFLICT OF THE 20TH CENTURY WAS LEFT VERSUS RIGHT.

IN THE 21ST CENTURY IT IS OPEN VERSUS CLOSED

--ALEC ROSS
SEVEN OSH LIMITATIONS:

#1) CLONING IS UNSTOPPABLE

What's Cloning?

• Not respecting Trademarks
• Not adhering to share-alike license terms
• Shameless copying of copyrighted marketing material
• No effort to give back to the community

When the cloners use your brand and the product doesn't work, it's your reputation that suffers.
INVESTORS AREN'T SURE

- They get the power of open source, but want to see some barriers to commercial copying
- Open software, closed hardware?
#3 IT'S HARD TO KEEP UP

In real-world production, hardware designs can change weekly to reflect component supplies.

It's too hard to publish and document design files every time, thus open hardware designs are often out of date and misleading, creating confusion and suspicions.
#4 IT DOESN'T EXTEND MUCH BEYOND ELECTRONICS AND LASER-CUT MATERIALS

THINGS WE DON'T OPEN SOURCE:

• Injection molded parts
• Extruded parts
• CNC'd parts
• Custom cables
• Packaging
#5 IT CAN CONFUSE THE MARKETPLACE

- Incompatible versions
- Outmoded designs still sold
- Misleading product descriptions
- No documentation
#6 IT TENDS TO DRIVES PRICES DOWN, PUNISHING INNOVATORS MOST

Race to the bottom of pricing leaves little time to recoup R&D investment
UNLIKE SOFTWARE, MECHANISMS FOR "GIVING BACK" ARE CRUDE.

Until we have a "version control for stuff" as effective as GitHub, much of the value of the return cycle will be lost.

Real community collaboration in hardware is still too hard.
ALTERNATIVES?

- Conditional license. Ask and we'll give you the files with some restrictions on commercial use.

- Schematics, not full design files.

- Open source software, closed source hardware (Raspberry Pi?)