USB and Open Source
A Sketchy History

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What is a USB ID?

Every USB device has an ID number:

“Hi! It's Me, 0x2341 0x0001!”

Can you find my driver?
USB Vendor ID (2 bytes)

0x2341 = (9025)

Image: http://www.arduino.cc
USB Product ID (2 bytes)

0x2341 =

0x0001 =

(1)

Images: http://www.arduino.cc
Example USB descriptor

```c
ROMPTR const unsigned char cdc_device_descriptor[] = {
    0x12,      // bLength
    USB_DEVICE_DESCRIPTOR_TYPE,  // bDescriptorType
    0x00,
    0x02,
    0x02,
    0x00,
    USB_EP0_BUFFER_SIZE,
    LOWB(USB_VID),       // idVendor (low byte)
    HIGHB(USB_VID),      // idVendor (high byte)
    LOWB(USB_PID),       // idProduct (low byte)
    HIGHB(USB_PID),      // idProduct (high byte)
    LOWB(USB_DEV),        // bcdDevice (low byte)
    HIGHB(USB_DEV),       // bcdDevice (high byte)
    USB_iManufacturer,   // iManufacturer
};
```

Other stuff about the device too
Get a USB ID

$2000 to USB Implementers Forum
- Group oversees USB, issues USB IDs
- 65K individual PIDs all your own (kind of..)
- To do with as you please (not really...)

Image: http://www.flickr.com/photos/68751915@N05/6629107607/
0x1337 is already taken (we asked)

Image: http://www.flickr.com/photos/paddyis1337/3087104882/
You can't get a custom vanity number...

...unless you're a founding member (evidently)
USB and Open Source

Distribution restrictions

Can’t be shared under an open source license, can't be sublicensed

Image CC: http://creativecommons.org/about/downloads
Image GNU: http://www.gnu.org/graphics/agnuhead.html
An actual problem

ATMEGA-based USB to serial converter chip on the latest Arduino

Image: http://www.arduino.cc
Everyone buys their own?

$2000 is a hefty investment for a hackerspace, open hardware project or kitchen table startup

Image: http://www.littlewire.cc
Resale

Each USB Vendor ID block has 65,000 numbers, so why not resell them?

– It's against the USB ID contract/license
– Let’s talk about the Dutch guys who tried
– Can't MacGyver our way around it
Squat a Range

USB IF can’t resell abandoned or revoked IDs

vendor VOTI 0x16C0 Voti

Not exactly professional but common in cheap electronics
OpenMOKO USB ID scheme

OpenMOKO open source phone
- Company dissolved, ID left to the community
- Reserving IDs on a wiki
- There’s no law to prevent it (*probably, yet)
- Fine for testing but not very professional
- Might still get nastygrams

Images: http://wiki.openmoko.org
Chips that come with an ID

Use a USB chip that already has an ID

- FTDI FT232 in Arduinos
- LPC ARMs with IDs built in
Sub license

Hardware makers may sub license USB IDs for their chips

Microchip (0x04D8)
- USB enabled PIC microcontrollers
- 10K limit

FTDI (0x0403)
- USB to serial converters
- Block of 8
Potential solutions

- Relax resale and sub licensing policy
- Testing block, reserved IDs for standards
- Open block, legitimize Open Moko approach
- Wait, run out, selling singles is marketing gold
Reform for Open Hardware

We need to do something, not currently a problem, but with more and more USB hardware the gray area of USB and Open Source will probably need to be addressed. When there is an Open Hardware Foundation we hope they would consider doing this work on behalf of open source hardware hackers who swear too much and don't care to get waist deep in the political side.