References and Presentation at:
http://www.elinux.org/Open_tools
Introduction

- Dave Anders aka prpplague
Introduction

- Dave Anders aka prpplague
- Currently Contracted with TI
Introduction

- Dave Anders aka prpplague
- Currently Contracted with TI
- Partners in TinCanTools
Introduction

- Dave Anders aka prpplague
- Currently Contracted with TI
- Partners in TinCanTools
- Open Tools for Board Bringup
Introduction

- Dave Anders aka prpplague
- Currently Contracted with TI
- Partners in TinCanTools
- Open Tools for Board Bringup
  - Open Tools History
Introduction

- Dave Anders aka prpplague
- Currently Contracted with TI
- Partners in TinCanTools
- Open Tools for Board Bringup
  - Open Tools History
  - Open Hardware Solutions
Introduction

- Dave Anders aka prpplague
- Currently Contracted with TI
- Partners in TinCanTools
- Open Tools for Board Bringup
  - Open Tools History
  - Open Hardware Solutions
  - Open Software Solutions
Open Tools History

- Open Tools in Science
Open Tools History

- Open Tools in Science
  - Experiments often require special tools
Open Tools History

- Open Tools in Science
  - Experiments often require special tools
  - New tools are shared with other scientists
Open Tools in Science

- Experiments often require special tools
- New tools are shared with other scientists
- Robert Bunsen - Bunsen Burner
Open Tools History

- Open Tools in Science
- Commercial Solutions
Open Tools History

- Open Tools in Science
- Commercial Solutions
Open Tools History

- Open Tools in Science
- Commercial Solutions
  - MS Windows Operating Systems
Open Tools History

- Open Tools in Science
- Commercial Solutions
  - MS Windows Operating Systems
  - Price
Open Tools History

- Open Tools in Science
- Commercial Solutions
  - MS Windows Operating Systems
  - Price
  - Features/Fixes
Open Tools History

- Open Tools in Science
- Commercial Solutions
- LART Project
Open Tools History

- Open Tools in Science
- Commercial Solutions
- LART Project
  - Open Platform
Open Tools History

- Open Tools in Science
- Commercial Solutions
- LART Project
  - Open Platform
  - JTAG – Holly Gates Dongle
Open Tools History

- Open Tools in Science
- Commercial Solutions
- LART Project
  - Open Platform
  - JTAG – Holly Gates Dongle
  - Physical memory access - devmem2
Open Hardware Solutions

- Logic Analyzers
Open Hardware Solutions

- Logic Analyzers
  - Open Workbench Logic Sniffer
Open Hardware Solutions

- Logic Analyzers
  - Open Workbench Logic Sniffer
    - 70MHz+ sample speeds
    - 32 channels
    - 16 buffered, 5volt tolerant channels
    - USB interface, USB powered
    - USB upgradable everything
    - Make it as DIY as possible
    - $30-$40 price range
Open Hardware Solutions

- Logic Analyzers
  - Open Workbench Logic Sniffer
  - Bus Pirate
Open Hardware Solutions

- Logic Analyzers
  - Open Workbench Logic Sniffer
  - Bus Pirate
    - 1-Wire
    - I2C
    - SPI
    - JTAG
    - Asynchronous serial
    - 2- and 3-wire libraries with bitwise pin control
    - Scriptable binary bitbang, 1-Wire, I2C, SPI, and UART modes
Open Hardware Solutions

- Logic Analyzers
  - Open Workbench Logic Sniffer
  - Bus Pirate
  - AVR/Arduino
Open Hardware Solutions

- Logic Analyzers
  - Open Workbench Logic Sniffer
  - Bus Pirate
  - AVR/Arduino (Insert Arduino Jokes Here)
Open Hardware Solutions

- Logic Analyzers
- Oscilloscopes
Open Hardware Solutions

- Logic Analyzers
- Oscilloscopes
  - Nano-DSO
Open Hardware Solutions

- Logic Analyzers
- Oscilloscopes
  - Nano-DSO
    - Based on ARM Cortex™-M3 compatible 32 bit platform
    - Unibody PCB design for better reliability
    - Portable and lightweight with 320x240 color LCD
    - Built-in Signal Generator
    - 6 triggering mode
Open Hardware Solutions

- Logic Analyzers
- Oscilloscopes
  - Nano-DSO
  - AVR and Arduino (Insert More Arduino Jokes here)
Open Hardware Solutions

- Logic Analyzers
- Oscilloscopes
  - Nano-DSO
  - AVR and Arduino
  - PIC Based
Open Hardware Solutions

- Logic Analyzers
- Oscilloscopes
- JTAG
Open Hardware Solutions

- Logic Analyzers
- Oscilloscopes
- JTAG
  - FT2232
Open Hardware Solutions

- Logic Analyzers
- Oscilloscopes
- JTAG
  - FT2232
    - JTAG
    - I2C
    - SPI
    - UART
    - GPIO
    - Open LIBS
Open Hardware Solutions

- Logic Analyzers
- Oscilloscopes
- JTAG
  - FT2232
  - Generic devices
Open Hardware Solutions

- Logic Analyzers
- Oscilloscopes
- JTAG
  - FT2232
  - Generic devices
  - Flyswatter
Open Software Solutions

- Platform Based
Open Software Solutions

- Platform Based
  - fb-test
Open Software Solutions

- Platform Based
  - fb-test
  - evtest

```
Input driver version is 1.0.1
Input device ID: bus 0x3 vendor 0x47d product 0x1029
version 0x110
Input device name: "Kensington USB/PS2 Wheel Mouse"
Supported events:
  Event type 0 (Sync)
  Event type 1 (Key)
    Event code 272 (LeftBtn)
    Event code 273 (RightBtn)
    Event code 274 (MiddleBtn)
    Event code 275 (SideBtn)
    Event code 276 (ExtraBtn)
  Event type 2 (Relative)
    Event code 0 (X)
    Event code 1 (Y)
    Event code 8 (Wheel)
  Event type 4 (Misc)
    Event code 4 (ScanCode)
Testing ... (interrupt to exit)
```
- Platform Based
  - fb-test
  - evtest

ITesting ... (interrupt to exit)
Event: time 1302309754.917080, type 2 (Relative), code 0 (X), value 1
Event: time 1302309754.917087, -------------- Report Sync -----------
Event: time 1302309756.837092, type 2 (Relative), code 0 (X), value -1
Event: time 1302309756.837099, -------------- Report Sync -----------
Event: time 1302309756.845079, type 2 (Relative), code 0 (X), value -3
Event: time 1302309756.845086, -------------- Report Sync -----------
Event: time 1302309756.853079, type 2 (Relative), code 0 (X), value -4
Event: time 1302309756.853083, type 2 (Relative), code 1 (Y), value 1
Event: time 1302309756.853086, -------------- Report Sync -----------
Event: time 1302309756.861079, type 2 (Relative), code 0 (X), value -5
Event: time 1302309756.861083, type 2 (Relative), code 1 (Y), value 1
Event: time 1302309756.861086, -------------- Report Sync -----------
Event: time 1302309756.869078, type 2 (Relative), code 0 (X), value -7
Event: time 1302309756.869083, type 2 (Relative), code 1 (Y), value 1
Open Software Solutions

- Platform Based
  - fb-test
  - evtest
  - devmem2
Open Software Solutions

- Platform Based
  - fb-test
  - evtest
  - devmem2
  - Vendor variations
  - Busybox
  - Buildroot
  - OE
Open Software Solutions

- Platform Based
- Host Based
Open Software Solutions

- Platform Based
- Host Based
  - Logic Analyzer - Sigrok
Open Software Solutions

- Platform Based
- Host Based
  - Logic Analyzer - Sigrok
  - Oscilloscope - XOscillo
Open Software Solutions

- Platform Based
- Host Based
  - Logic Analyzer - Sigrok
  - Oscilloscope - XOscillo
  - JTAG - OpenOCD
Open Software Solutions

- Platform Based
- Host Based
- Desktop Utilities
Open Software Solutions

- Platform Based
- Host Based
- Desktop Utilities
  - Gerbv
Open Software Solutions

- Platform Based
- Host Based
- Desktop Utilities
  - Gerbv
  - Edanator
Open Software Solutions

- Platform Based
- Host Based
- Desktop Utilities
  - Gerbv
  - Edanator
  - GUVCView
Conclusion

- Long History of Open Tools
Conclusion

- Long History of Open Tools
- Open Hardware Tools
Conclusion

- Long History of Open Tools
- Open Hardware Tools
- Open Software Tools
Conclusion

- Long History of Open Tools
- Open Hardware Tools
- Open Software Tools
- Incentive to contribute
Conclusion

- Long History of Open Tools
- Open Hardware Tools
- Open Software Tools
- Incentive to contribute
- Transition to open tools
Conclusion

- Long History of Open Tools
- Open Hardware Tools
- Open Software Tools
- Incentive to contribute
- Transition to open tools
- Documentation
  - http://www.elinux.org/Open_tools
Questions?