

# HP-IL 2009

Egan Ford (egan@sense.net)

HHC 2009

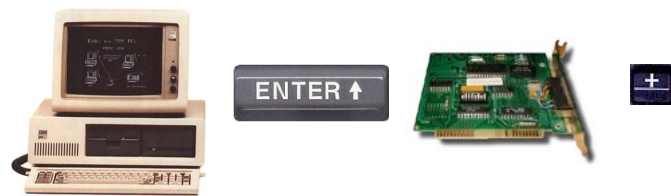
## HP-IL: Before 2009

- Native devices, displays/video, printers/plotters, 41/71, lab equipment, etc... (see back of room)
- Connecting to non-HP-IL devices:
  - RS-232/IB/GPIO/custom interface
  - Floppy 9114B (meat-net)
  - *Breakthrough* ISA Adapter/Windows/Linux (DOSEMU)/DOS
    - HP/Klug Card
    - Legacy DOS tools available
  - EMU41/EMU71
    - HP/Klug Card
  - Hrast Programmer 41/71 emulators
    - 48GX serial to Windows HP-IL emulation
  - *Times are changing, we need something new...*

## HP-IL: 2009

- Open Source HP-IL code
  - Khanh-Dang Nguyen Thu-Lam adds HP-IL emulation to Nonpareil
    - Disk, tape, printer, 32 and 80 Column Video, Serial, TCP, Debugger/IL Monitor!
    - **PIL-Box now supported!**
- Jean-Francois Garnier introduces the PIL-Box--a new HP-IL <-> PC link solution.
  - HP-IL/Serial (RS232 or USB) translator.
  - NO OBSOLETE HP PARTS such as the HP-IL chip or the custom HP-IL pulse transformer.
  - Aims to be an alternative to the old ISA HP-IL board (HP82973A) and to be compatible with most computers/OS that support RS232 or USB.
  - Windows, Linux, and OS/X tested!

Just to be clear...



is equivalent to:

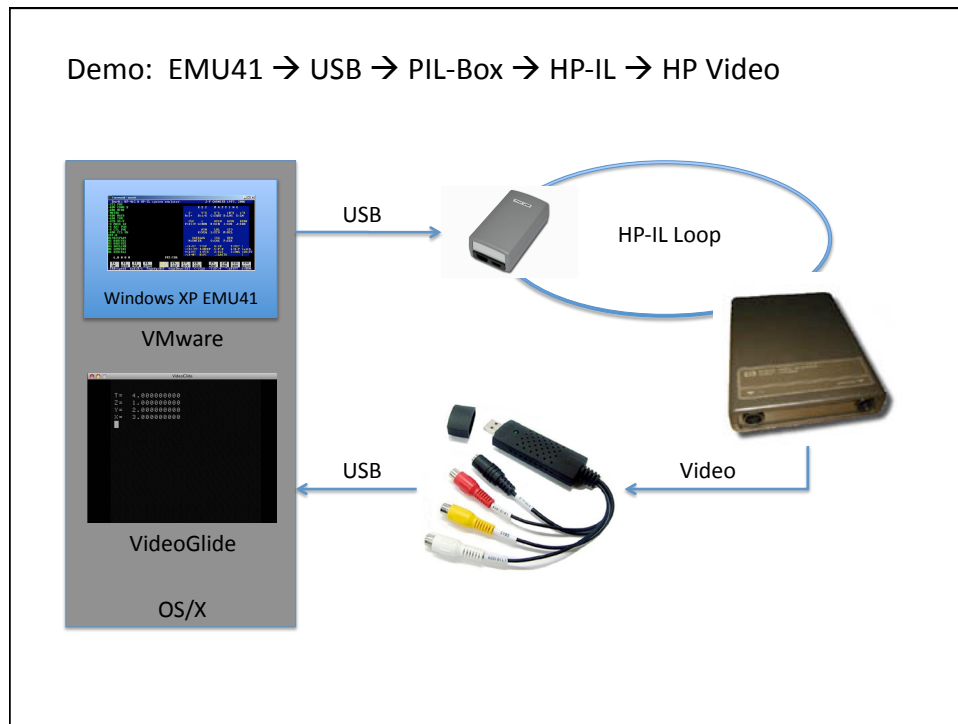


## Who cares? Why does this matter?

- If you have to ask, then you're at the wrong conference.
  - Somebody please call security.
- Seriously
  - HP-IL devices are getting rare.
    - Emulation of devices is a great solution for hobbyists and historians.
  - New opportunities to geek-out.
    - E.g. HP-IL to TCP, 41CX Web Server (yes, its real)
  - Preservation.
    - Get a digital backup of 20+ year-old code from your 41CX and cache of floppy disks/tapes. Then run it on your shiny new iPhone or emulator of choice.

## Live Action Demonstration

Less talk, more *talk*



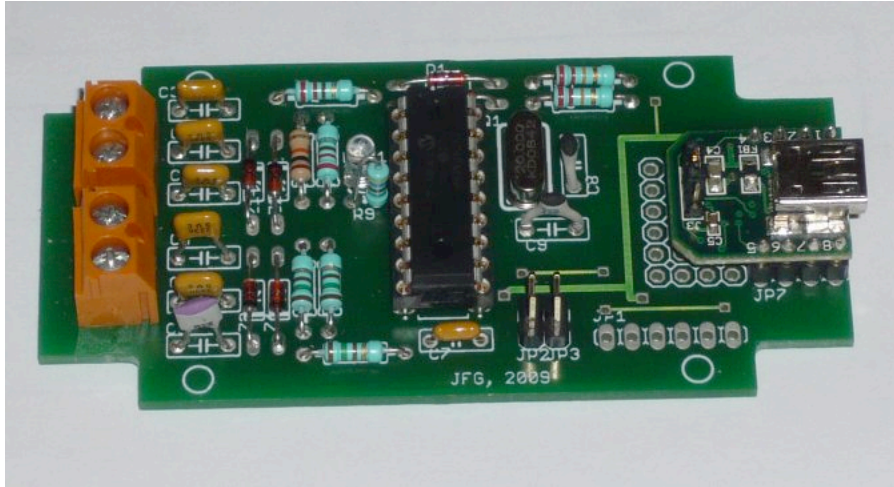
## EMU41 2.47 EMU41.INI:

```
; emu41.ini          emu41 init file

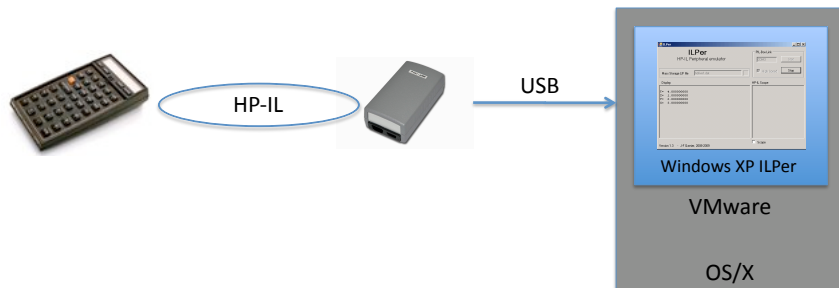
[MODULES]
; page size filename
0 12 rom41cx.bin
3  4 cxfcn2d.bin
5  8 cxtme2c.bin
;6  4 prter1e.bin
6  4 prter2e.bin
7  4 hpillh.bin
; -----
;8 12 adv41b.bin
;10 4 xiola.bin

[DEVICES]
;DISPLAY
;HDRIVE1
;LPRTER1
;DOSLINK
;XIL COM3
```

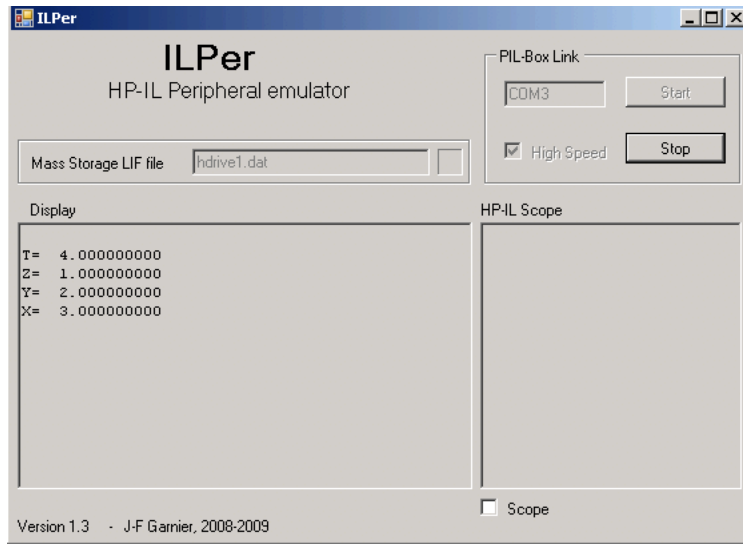
PIL-Box: JP2 to select “high-speed”



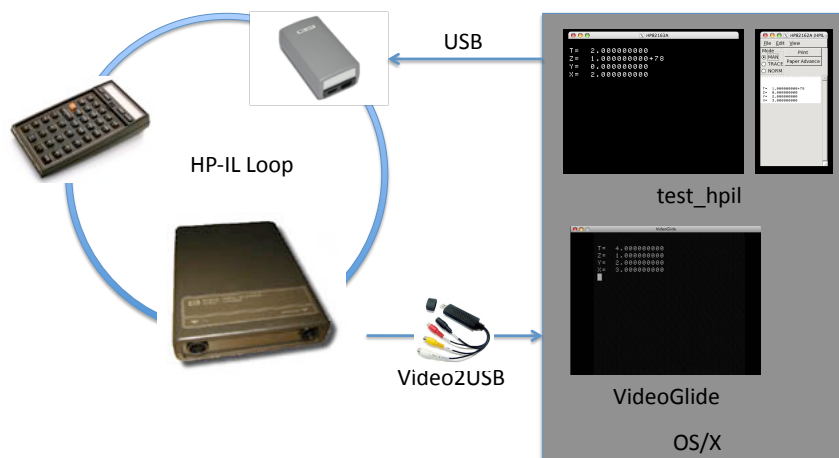
Demo: 41CX → HP-IL → PIL-Box → ILPer (HP-IL device emulation)

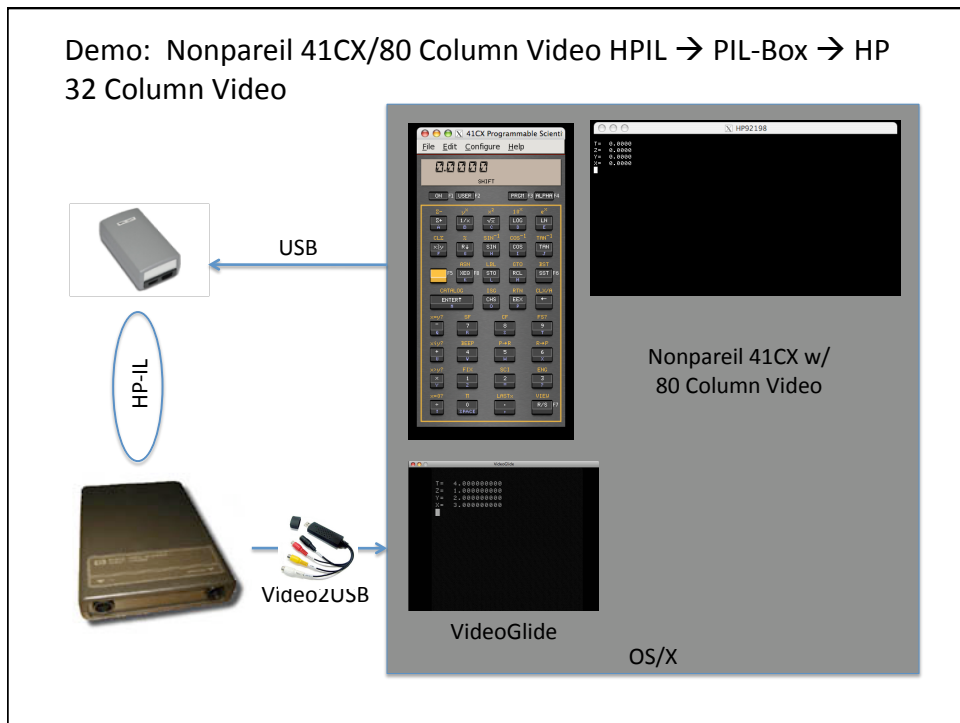
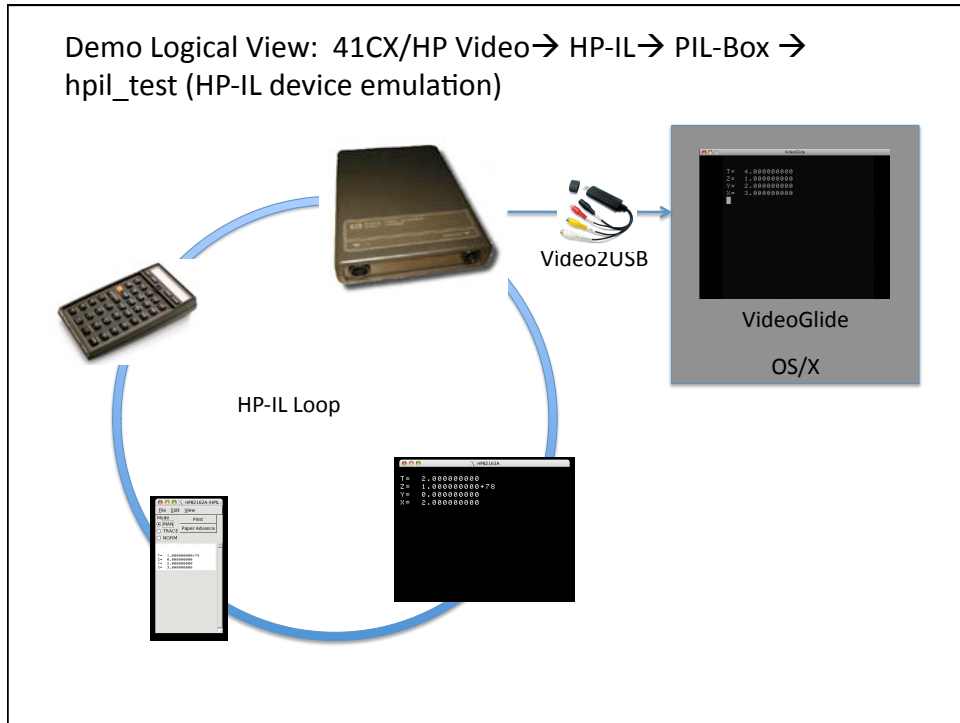


## ILPer Screen Short

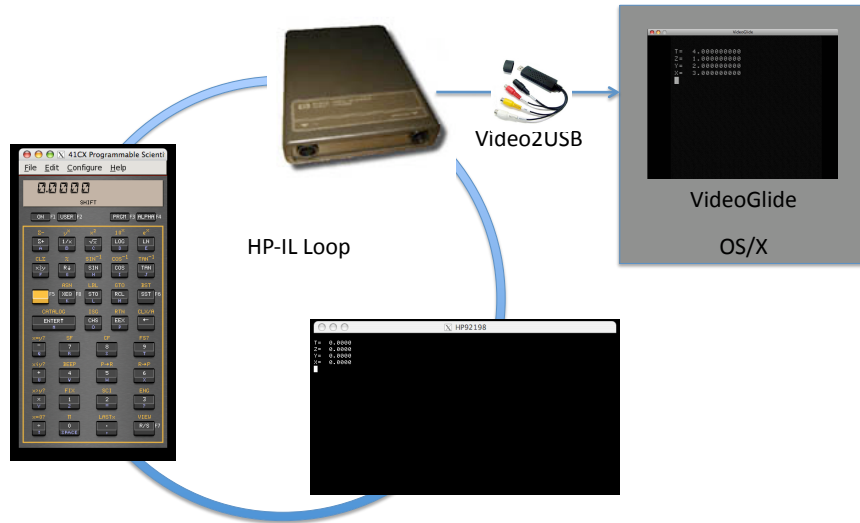


Demo: 41CX/HP Video → HP-IL → PIL-Box → hpil\_test (HP-IL device emulation)





Demo Logical View: Nonpareil 41CX/80 Column Video HPIL →  
PIL-Box → HP 32 Column Video



How did this get done?  
Who is responsible?



## Transatlantic Development Cycle



1. Egan Ford orders PIL-Box from Jean-François.

## Transatlantic Development Cycle



2. Jean-François sends Egan Ford a PIL-Box.

## Transatlantic Development Cycle

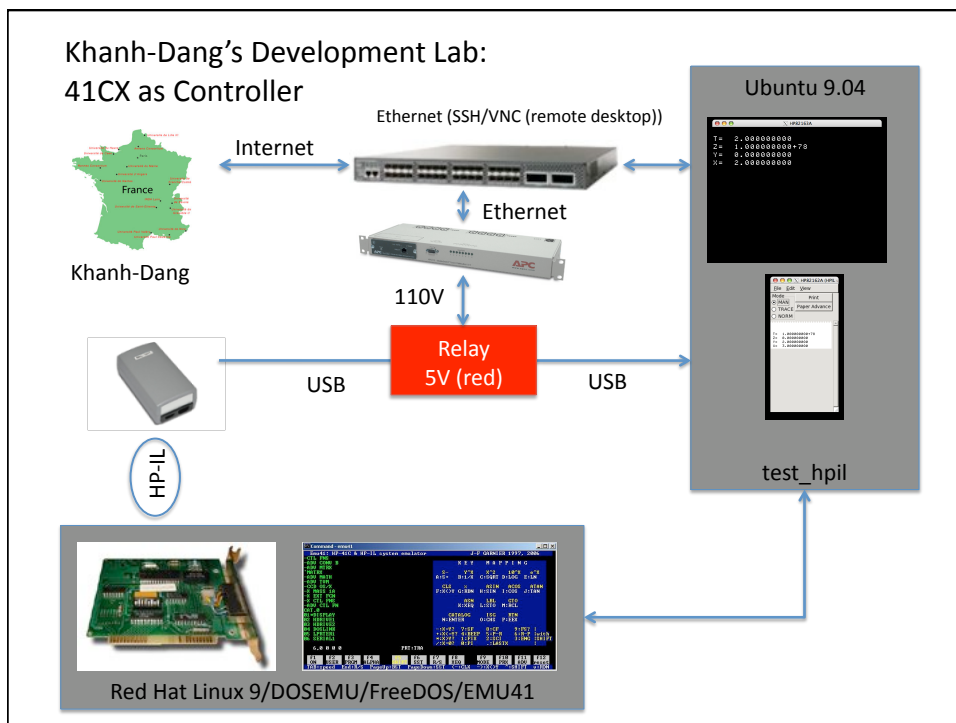
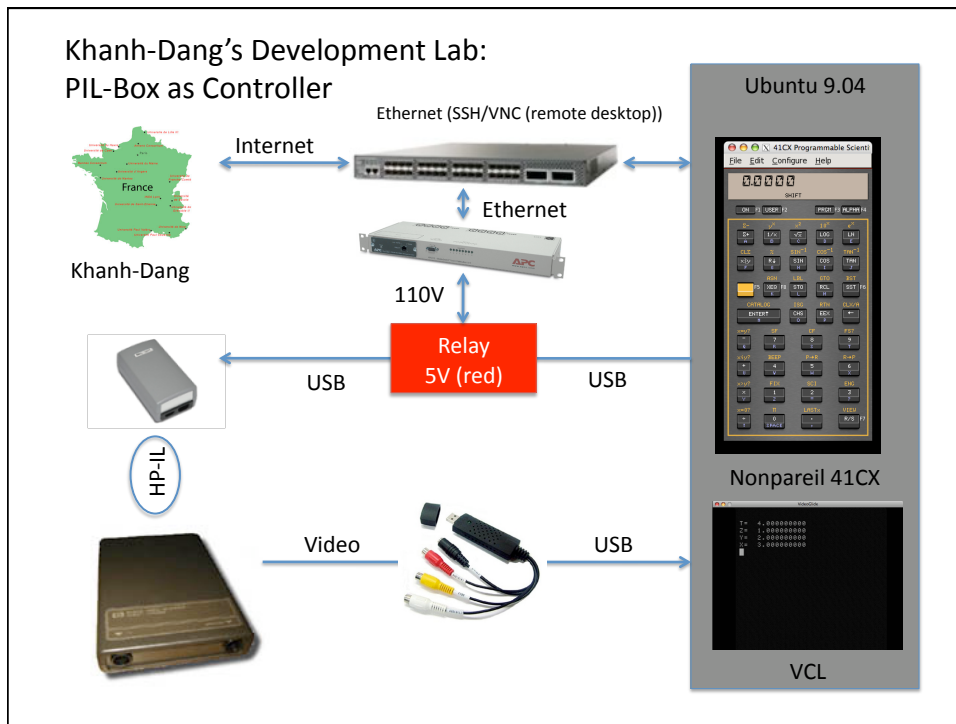


3. Egan Ford asks Khanh-Dang for Nonpareil PIL-Box development support.

## Transatlantic Development Cycle



4. Khanh-Dang finds it faster to just write it himself. Egan Ford sighs relief.



## Future work

- Nonpareil HP-IL emulation to be standalone
  - HP-IL abstracted
    - Virtual devices can be inserted into loop
      - TCP Sockets
      - UNIX Domain Sockets
    - Physical devices supported
      - PIL-Box
      - ISA adapter (perhaps)
    - API to invent your own virtual HP-IL device
      - E.g. home automation
    - Windows, OS/X, and Linux versions
      - Nonpareil 41CX will just be another virtual device
- Will beg i41CX+ author to support Nonpareil HP-IL emulation with TCP support.
  - i41CX+ and other emulators should be able to use HP-IL over TCP to a gateway (PC + HP-IL emulation)
- Needs a cool name
  - E.g. Khanh-Dang IL Box, or KIL-Box

## Credits/More Information

- Matthias Wehrli
  - Most of the clip-art in this presentation (used without permission, sorry Matthias)
  - <http://www.hp-collection.org/calculators.html>
- Eric Smith
  - Nonpareil 41CX emulation
  - <http://nonpareil.brouhaha.com/>
- Jean-Francois Garnier
  - PIL-Box/ILPer
  - EMU41
  - <http://www.jeffcalc.hp41.eu/hpil/index.html>
- Khanh-Dang Nguyen Thu-Lam
  - Nonpareil 41CX HP-IL emulation
  - Nonpareil PIL-Box support
  - Standalone HP-IL device emulation
  - NutIP (TCP/IP for 41CX)
  - <http://pagesperso-orange.fr/kdntl/hp41/>
- Egan Ford
  - Marketing
  - [egan@sense.net](mailto:egan@sense.net)

## Giveback

*"As we enjoy great advantages from inventions of others, we should be glad of an opportunity to serve others by any invention of ours; and this we should do freely and generously." -- Benjamin Franklin*

Rant: I/O is the special sauce!



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