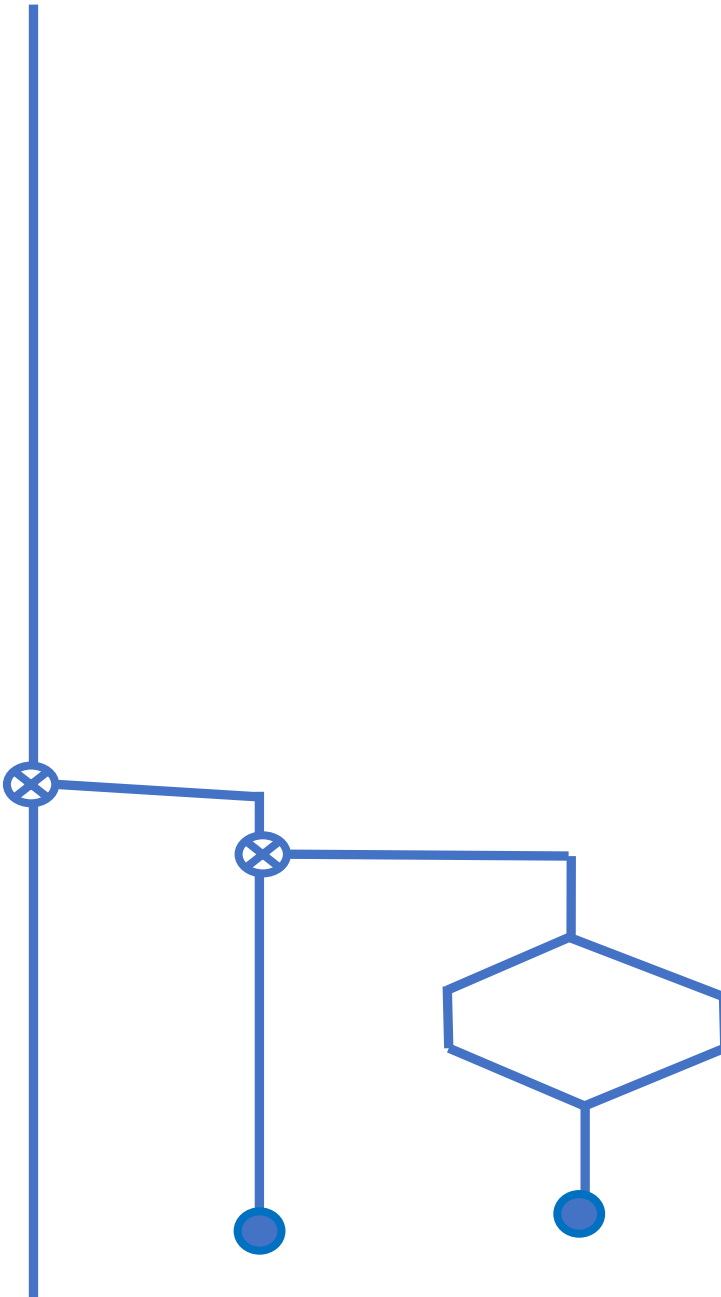# Through The Forth Jungle With Gun and Camera

Silicon Valley Forth Interest Group
Oct. 23, 2021
Bill Ragsdale

Your Expedition Itinerary

Summary: We travel the bumpy road from a one-board, 6502 processor through a series of automation and control products to Win32Forth. We end with an overview of Bill Ragsdale's *Win32Forth Manual*.

The Quest

Dorado Systems made a wired logic, card access controller. (And remote monitoring.)

A 'next generation' was afoot.

We didn't need a computer.

We needed programmed logic and memory.

Weapons

Jolt, tabletop, 1975

Jolt in the "Blue Box", 1977

Dorado 6502 Board in the "Brick", 1980

F83 by Laxon and Perry in a PC, 1983

ANSI Forth, 1985 onward

Win32Forth, 2000 on

Weapon Number One

A one board computer for $275. In stock now.

Jolt Resources

6052 CPU at 1 MHz.

Ram, 512 bytes Pages Zero & One.

DebugMonitor/TIM 1 K ROM, 2 Timers,16 I/O lines.

PIA 6820 adds 16 I/O lines.

RS232 TTY interface, selected Baud rate.

Two interrupts, maskable and non-maskable.

ROM expansion 16 Kbyte.

RAM expansion. 4 K and 16 K byte.

Side Excursion

Saw the Byte ad for Jolt on Wednesday

Ordered on Thursday

MAI received DeMon on Friday.

Picked up on Saturday. Serial number 1.

Ran on Sunday.

Assembler: one pass, sorted symbol table, runs from 2k ROM. Buggy, no documentation.

Bob Selzer and I repaired and donated the result.

Wrote their line editor.

Began my Forth journey.

Target One – Demo

An ID badge, card reader demonstration for Honeywell.

Target One - Demo
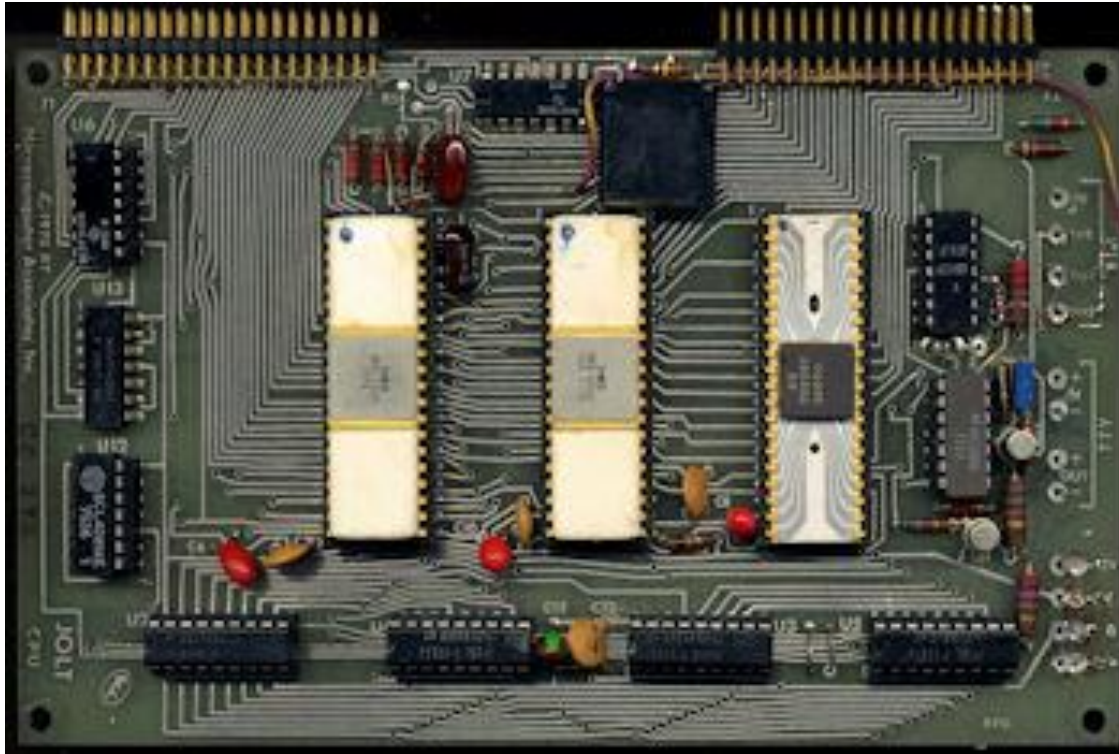
Incidentally

The Jolt was designed by Ray Hold and Manny Lemas of Microprocessor Associates, Inc.

They designed the DeMon/TIM for MOS Tech.

They inspired (designed?) the KIM-1 for MOS Tech.

They designed the Sym-1 for Synertec.

Target One - Demo
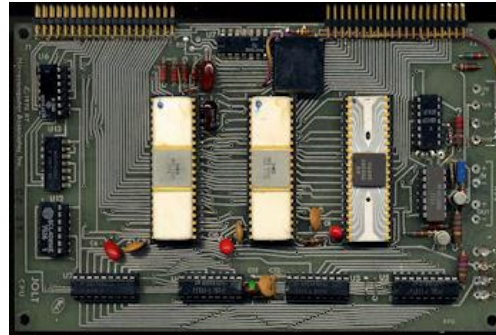
Our Kill Number One

Wowed Honeywell visitors reading magstripe cards by name and number.

After they had been let down by two other possible suppliers.

All edits and assembling done paper tape to paper tape. Scissors and glue.

Weapon Number Two fig-FORTH

We needed a development system.

Created my in-house Forth from microForth 6800.

It grew to become fig-FORTH.

Along came the Forth Interest Group and much more side effort.

Speaking of FIG

Weapon Number Three, Blue Box

The Jolt system was integrated with a Persci dual floppy drive, high speed paper tape reader and an ADM-3A Terminal.

Inside the Blue Box
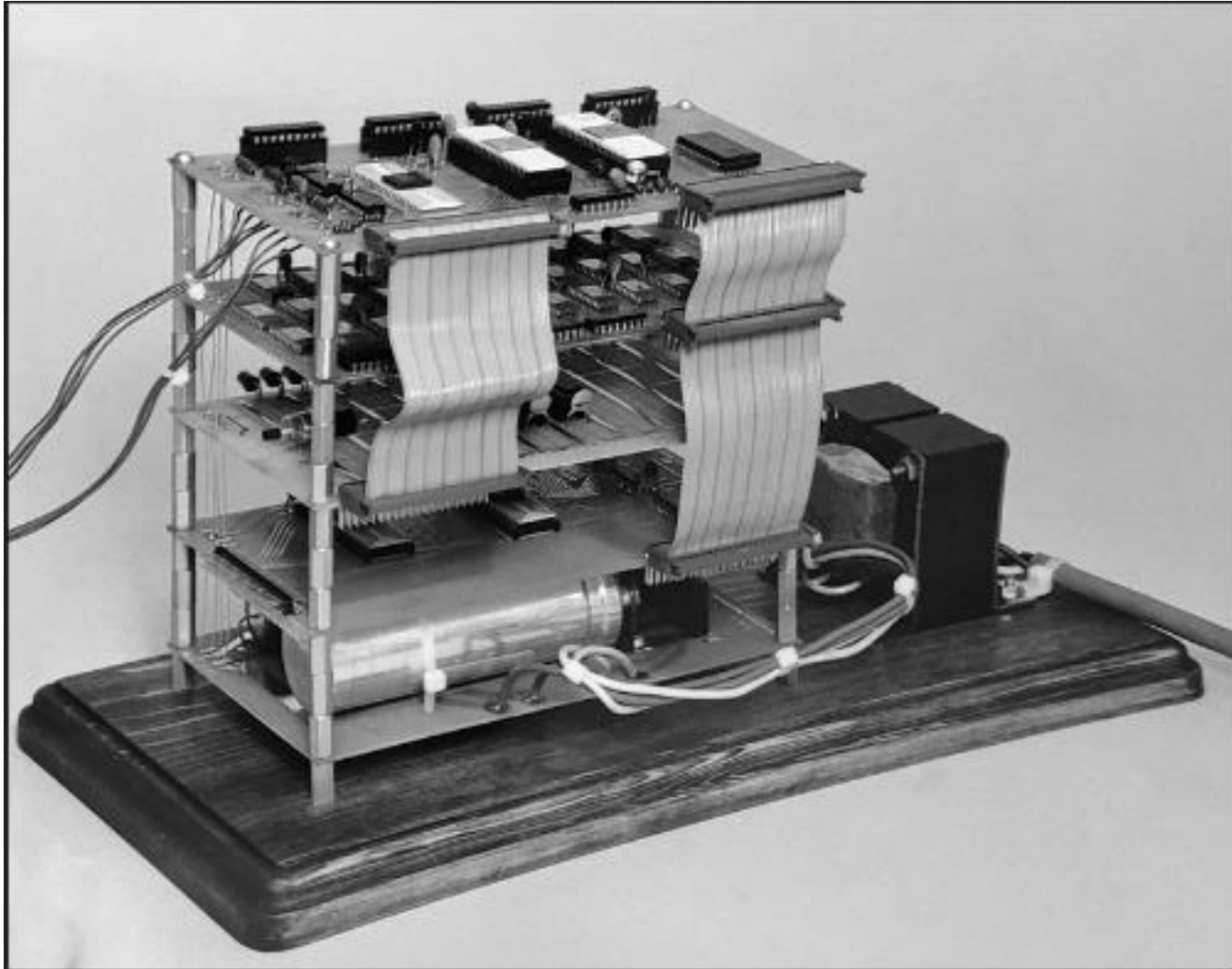
Inside the Blue Box
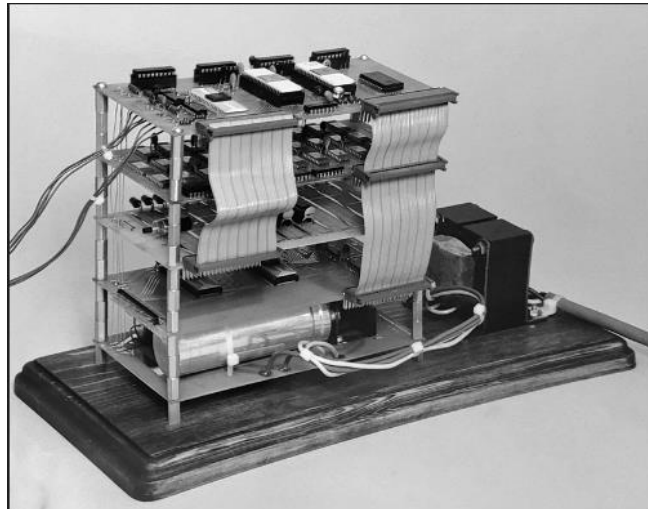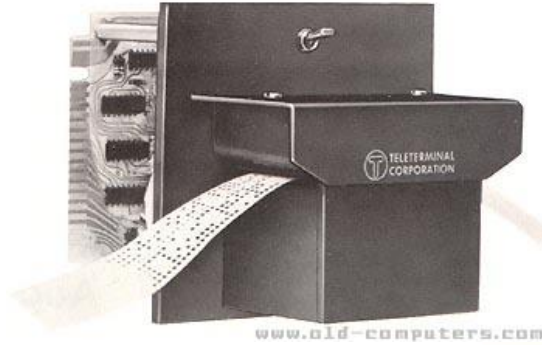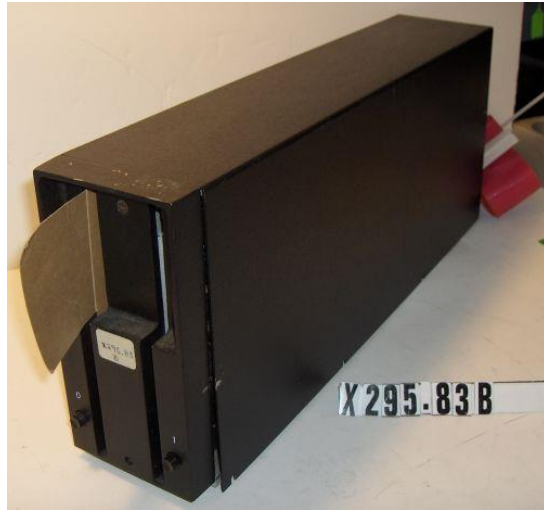
The Second Kill

A four door control panel.

DC battery backed-up.

Reports to Honeywell Alpha 3000.

Programed in sub-routine threaded Forth tethered to the "Brick" development system.

Over ~2,000 sold, world-wide. BZR, San Onofre, Denver Stapleton Airport.

Four Door Controller
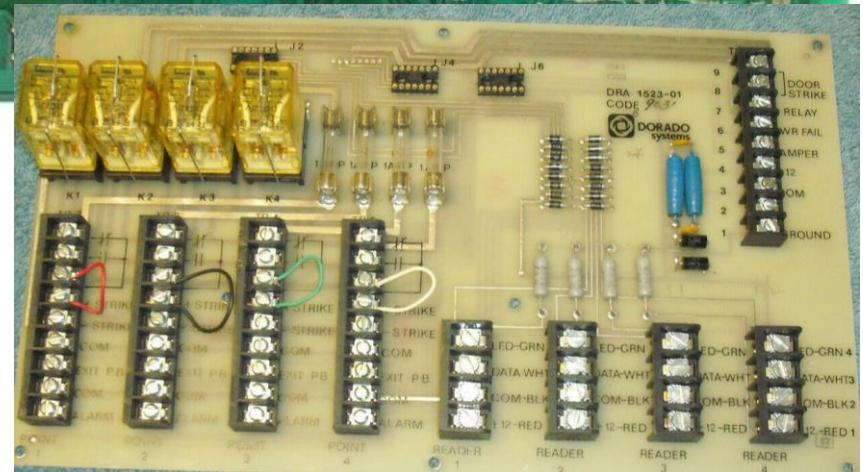
Weapon Number Four, F-83

Forth-83 by Henry Laxon and Mike Perry.

Dorado Systems retired the "Brick" and moved to PC systems.

Archives now on files, not blocks.

8" floppy to 5-1/4" floppy to 3-1/2" floppy.

And hard drives, at last.

Kill Number Three
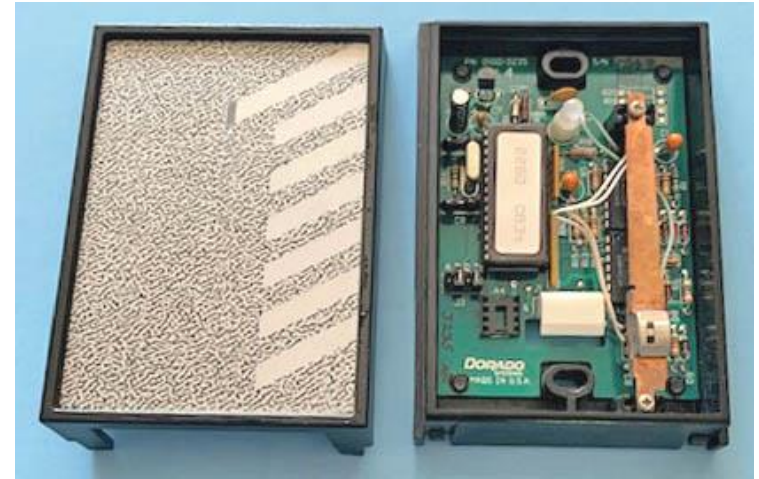
Magstripe Card Reader

80C51 Processor

One time programmable

With security bit to block ROM memory read.

Sold industry wide. 4,000 at Denver International.

Can be found on eBay now!

Kill Number Four, Cybernaut

Energy controller for Retail stores.

~300 installed in Lucky Food Stores.

Installed cost $5,000. Saved $1,000 per month.

On/off/auto/cycle for 24 channels.

Dial up access by an Apple][computer, off hours.

CPU was Synertec Sym-1.

Added store interface, modem, real-time clock, battery backup, local and remote terminal access. And Forth!

Sym-1, Cybernaut CPU

Cybernaut Layout

Modem,
Clock,
Diagnostics,
Terminal
 Interface.

Dial-up telco.

Store
Interface
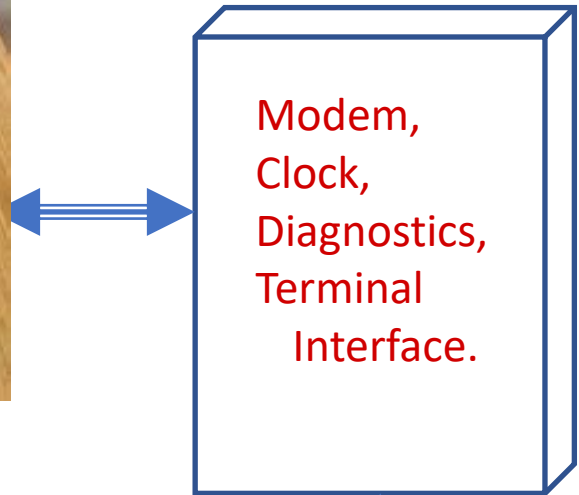
Project Management

No specification.

Customer, "I don't know what I want, but I'll know when I see it".

Met the customer representative, a field engineer, every three days.

```
: Project
   begin
      demo   evaluate   suggestions
      program    review  ?happy
   until  ;
```

After The Expedition, Leisure Time

Recreational Shooting

Win32 Forth by Andrew McKewan and
Tom Zimmer 1995

Updated in early 2000 by European team.

ANS Compliant.

A 'frozen' system as no additions have
been made.

Primarily, user interface updates and the
use of later Windows internal functions.

Armament

New to me, since F-83:

Use of files (I was in the Block generation).
Catch and Throw
N-way Multi-threaded dictionaries
[IF] [ELSE] [THEN]
Standard messages
Floating point & stack, trig, trancendentals.
Defer, postpone.
Object oriented programming.
Execution chains.
Heap, memory management.
Tools: see, view and debug.
The expanded definition header.

As I encountered W32F elements I took notes which expanded into the current 80 page Word document.

Let's Look At W32F Guide

Credits

- Andrew McKewan and Tom Zimmer for Win32Forth.

- The European team who updated it in the early 2000s.

- All the effort of Forth Fanciers around the world.

References

- https://github.com/BillRagsdale/Forth_Projects

- https://github.com/BillRagsdale/WIN32Forth-Guide