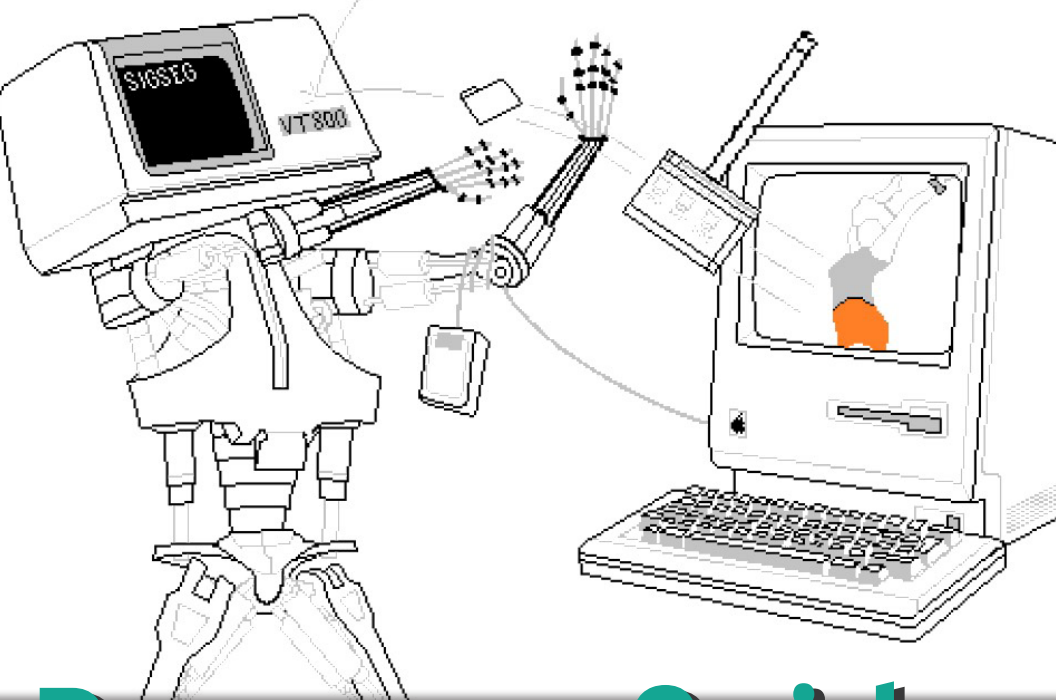


# Vintage Computer Festival West



# Program Guide

# Schedule

## Friday August 2

[Read more about each event on page 4.](#)

	Talks	Activities
10:00 am	SHOW OPENS	
10:30 am		
11:00 am	Lunar Lander and the GT40 – <i>Scott Swazey</i>	CHM 1401 Demo Consignment opens
11:30 am		
12:00 pm	Engelbart, Edge Notched Cards, and Pre-Digital Hypertext – <i>Sean Haas</i>	
12:30 pm		
1:00 pm	Before Macintosh: The Apple Lisa – <i>David Greelish</i>	
1:30 pm		
2:00 pm		
2:30 pm		CHM PDP-1 Demo
3:00 pm	Whirlwind Software Restoration – <i>Guy Fedorkow</i>	
3:30 pm		
4:00 pm	Introduction to Digital Electronics: From Schematics to Circuits – <i>Marcel Erz</i>	
4:30 pm		
5:00 pm	Pennywhistle 103, the Modem Breakthrough – <i>Lee Felsenstein</i>	Consignment closes
5:30 pm		
6:00 pm	SHOW CLOSES	

## Saturday August 3

[Read more about each event on page 4.](#)

	Talks	Activities
9:00 am	SHOW OPENS	
9:30 am		
10:00 am	Extinction Event: Z80 - How will Modern/Retro Survive? – <i>Sean Harrington</i>	Consignment opens
10:30 am		
11:00 am		CHM 1401 Demo
11:30 am	Ada Programming Language: Then and Now – <i>Richard Riehle</i>	
12:00 pm		
12:30 pm		
1:00 pm	How Atari DNA Fueled Silicon Valley's Evolution – <i>Howard Scott Warshaw</i>	
1:30 pm		
2:00 pm	Mastering PCB Design with KiCAD: From Concept to Creation – <i>Marcel Erz</i>	
2:30 pm		CHM 1401 Demo
3:00 pm	Testing 678 Chips and Counting – <i>Evie Salomon</i>	3:30 - Consignment closes
3:30 pm		
4:00 pm		
4:30 pm	AWARDS	
5:00 pm	SHOW CLOSES	

## Consignment

Friday, 11:00 am - 5:00 pm | Saturday, 10:00 am - 3:30 pm

The consignment area allows people to buy and sell vintage computer related items during our shows.

Consignment will be located at the top of the stairs from the CHM entrance in the space beyond the classrooms. We will open up one or both classrooms for overflow if that space fills up.

Visitors to the show (other exhibitors included) will often stop by the consignment area looking for treasure.

If you make a pricing deal please contact the seller and have them change the price in the system. They should change the price in the seller's account.

All consignment items, sold or unsold, MUST be removed promptly after the show closes on Saturday.

# Speakers

## Friday August 2

**Lunar Lander and the GT40** – *Scott Swazey*  
A talk about the restoration of the DEC GT40 terminal and running the Lunar Lander game on that device.

**Engelbart, Edge Notched Cards, and Pre-Digital Hypertext** – *Sean Haas*  
Hypertext is one of those technologies that's wildly revolutionized the world. It's one of those wonderful leaps forward that just makes so much sense in digital systems. However, there's a forgotten past to hypertext. Before the Internet, before the Mother of All Demos, there were paper systems eerily similar to the modern information superhighway.

**Before Macintosh: The Apple Lisa** – *David Greelish*  
"Before Macintosh: The Apple Lisa" is a fascinating look into the computer that really changed the way we used personal computers; it started the modern personal computer revolution. The Lisa was in fact the unofficial prototype Mac, but there is so much more to tell. Quite a few important people are interviewed from Apple, including John Sculley, Bill Atkinson and John Couch, plus other notable people who were later involved with the Lisa, as well as enthusiasts and collectors. Film screening followed by Q&A.

**Whirlwind Software Restoration** – *Guy Fedorkow*  
An overview of the Whirlwind real-time digital computer designed at MIT. When brought on line in 1950, Whirlwind was one of the largest computers in existence. We then focus on restoration of one application of Whirlwind, development and demonstration of an interactive real-time air defense application, using radar data to compute headings to guide piloted interceptor aircraft towards intruders. The 1951 demonstration ultimately evolved into the SAGE continental air defense system.

**Introduction to Digital Electronics: From Schematics to Circuits** – *Marcel Erz*  
Join me for an immersive crash course in digital electronics, where you'll learn to read simple schematics and assemble digital circuits on a breadboard. This workshop is geared toward beginners who want to extend their vintage computers, focussing on TTL ICs and covering the fundamentals of digital circuit design.

**Pennywhistle 103, the Modem Breakthrough** – *Lee Felsenstein*  
We will discuss the origin of the Pennywhistle 103 design. We review the circuit diagram stage by stage and describe the self-calibration feature, which relies upon handling asynchronous serial data. The active filter design, an original creation, is described and the bidirectional options required for tape recording data and playing it back. We conclude with a discussion of the Kansas City tape standard, written by Felsenstein and Howard Mauch after the eponymous conference held in Kansas City in 1976.

## Saturday August 3

**Extinction Event: Z80 - How will Modern/Retro Survive?** – *Sean Harrington*  
With the impact of Zilog's announcement in June that the Z80 processor will be discontinued, how will systems that use the CPU be affected? Using the Aquarius+ and ZX Spectrum Next as examples, we'll talk through the options that collectors and developers will have to consider as the nearly 50 year old processor transitions to the next phase of its existence.

**Ada Programming Language: Then and Now** – *Richard Riehle*  
The Ada Programming language was developed for the USA Department of Defense in the late 1970's and became the primary language for developing DoD software with the introduction of the 1983 Ada standard. Until the early 1990's, it was the mandated language for all DoD software. Unlike most other languages, Ada is designed around engineering principles with complete support for computer programming practice. Ada is still an important language option, not only for defense projects but also for commercial safety-critical projects, such as avionics, medical, automotive, air traffic control, and aerospace.

**How Atari DNA Fueled Silicon Valley's Evolution** – *Howard Scott Warshaw*  
Atari lit a match that set the world on fire! The fundamental belief that the right product can change the world (and make us rich and famous) infected everyone who worked there. When Atari ultimately collapsed, over 10K of these people spread throughout the valley, bringing this energy to every company they joined. Howard has been there all along. His talk delves into how this all came to be and how it created other historical landmarks in Silicon history.

**Mastering PCB Design with KiCAD: From Concept to Creation** – *Marcel Erz*  
Dive into the world of PCB design with KiCAD. This session is geared towards beginners. From crafting schematics to generating PCB layouts and ordering prototypes, you'll gain practical skills applicable to vintage computing and beyond.

**Testing 678 Chips and Counting** – *Evie Salomon*  
Repairing vintage machines can be extremely frustrating, as anybody who's worked on one knows. There are numerous troubleshooting tools that can be used, such as a multimeter, logic analyzer, or memory oscilloscope. But what if the problem is internal to an integrated circuit? Layers upon layers of buried logic can take forever to decipher. That's where automated testing can really come in handy. Evie will discuss the lessons she's learned over the last few years from developing the BackBit Chip Tester, what motivates her to keep writing tests, and insights on making even better tests.

# Exhibitors

VCF exhibitors put amazing effort into displaying their favorite historic computing systems. Be sure to visit them all, ask questions, play, learn, Tweet, and take lots of pictures! Perhaps you'll be inspired to exhibit your own pride-and-joy at VCF West 2025 next year.

**Steve Jobs and the Apple Computer Revolution** – *Bobby Eaton*  
Displaying historical documents and vintage computers.

**C64i - Commodore 64 Improved** – *Francis Bernier*  
The final prototype for a new motherboard for the C64.

**Project Ivy** – *Katarina Melki*  
A collection of rare and unusual IBM ThinkPads and portables. Including the famous 701c "Butterfly", the early 2-in-1 360P, the cute and tiny, Japan-exclusive Pal Top PC 110, and the very first ThinkPad laptop 700 PS/2. All restored to full working condition and running period appropriate software.

**WiFi Retromodem** – *Scott Swazey*  
Scott Swazey will be demoing his non-destructive WiFi upgrade to the popular Hayes Smartmodem series.

**Game (almost) Over: The Return of Apple** – *Chris Turpin*  
This exhibit takes a look at an Apple that barely avoided bankruptcy and—under the direction of Steve Jobs—took Apple in a bold, new, colorful and sleek direction that would lay the foundation for Apple's meteoric rise in the 2000s.

**Friends of the Palo Alto Library** – *David Cortesi*  
Stacks of interesting computer books from the 80s and 90s for sale.

**Core Memory - Interactive!** – *Andy Geppert*  
Hands-on exhibit with Core Memory! This is a unique opportunity to try out fun demos using Core Memory in conventional and unconventional ways. Used throughout the Apollo program, learn how Core Memory works and the unique properties which made it the most prevalent type of computer memory in the 1960's. Swirl some neon gas with a magnet and a 6502 while you're at it... You can also buy a DIY kit so you can make your own Core Memories!

**S100 Bus Computers New and Old** – *Jay Cotton*  
Several S100 bus computers, including a PDP11/73 and Z180 as well as 8080 and z80 boards.

**Live Circuit Board Re-caping & Repair** – *Arion Paylo*  
Live demonstration of replacing surface mount and through-hole capacitors, trace repair and board cleaning.

**TETRIS on Early Soviet PCs and Apple 1 Clone** – *Mike Khitrykh*  
Various Soviet PCs running TETRIS along with Apple 1 and Apple II and an early Mac also running the game.

**Keith's Mac Hacks** – *Keith Kaisershot*  
Ordinary Macs, creative hacks.

**IBM 1130** – *System Source Comptuer Museum*  
Exhibition of a restored IBM 1130.

**VMEbus Card Showcase** – *Dan Hembry*  
A collection of The VMEbus (aka IEC 821, aka ANSI/IEEE 1014-1987) including video cards, custom and prototype ISDN hardware, simple memory banks, and unusual high-reliability hardware of unknown providence.

**The MOnSter 6502** – *Eric Schlaepfer*  
The MOnSter 6502 is a replica of the famous 8-bit 6502 CPU made out of discrete transistors (and LEDs) on a very large circuit board.

**The Compact Macintosh Garden** – *Steve Brunwasser*  
A showcase of the original line of Apple Macintosh computers from its debut in 1984. Celebrate 40 years of the Mac and take a look at where it all began. Experience running software off floppy disks, and play classic video games in all their black and white glory.

**UNIX and the Telebit Trailblazer** – *Steve Jones*  
The spread of UNIX and USENET created a niche for the Telebit Trailblazer. In the mid-1980s, when common modems offered speeds of 1200 bps, the Trailblazer was over 10 times faster! This exhibit will have UNIX systems swapping files over Trailblazers with UUCP, and (hopefully) NetNews/USENET too.

**Apricot Computers - Fruity Alternatives from the United Kingdom** – *John Ball*  
The exhibit will consist of 4-5 computers spanning from the Victor 9000, which ACT would rebrand and market in Europe as the Sirius 1 and kick off their own computer line starting with the Apricot PC to their last non-PC compatible, the Apricot Xen. Each machine displays the stunning styling that ACT/Apricot would become famous for.

**Keeping Commodore Alive** – *Nicholas Bustamante*  
Multiple commodores from 8-bit to 32-bit being kept alive with modern parts and add-ons. Some machines are stock, some are modified, but all provide the Amiga experience!

**SPARC of Imagination** – *Julian Carter-Carvalho*  
Showcase of a few SPARC machines from Sun.

**A History of ULTRIX** – *Madeline Autumn-Rose*  
ULTRIX started on the PDP-11 and made its way through the VAX to MIPS DECstations. Presented are interactive environments showcasing examples of all 3 architectures it ran on.

(Continued...)

## Exhibitors, continued...

### **40 Years of Macintosh** – *Ryan Burke*

The original Macintosh turned 40 this year! To celebrate, you can stop by and see every single compact Macintosh released in the U.S., along with some other unique additions in Apple's history.

### **Long Live the Z80!** – *David Henderson*

A hands-on presentation of several systems celebrating the original Z80 microprocessor, which is ceasing production after 48 years on the market. This versatile microprocessor was designed and developed by a team at Zilog including Federico Faggin, Ralph Ungermann and Masatoshi Shima.

### **Motorola 6800 Exorciser Systems Menagerie**

– *Stanley Ruppert*

History and demonstration of Motorola 6800 development kits, development systems, and micromodules produced from 1975 to 1979. Highlighting function, utility, original documentation, and use in various settings from industrial control, academic and engineer training to research/engineering labs. Includes kits such as 6800D1, 6800D2, 6802D5, micromodule subsystems, up to disk based Exorciser Development systems.

### **8-bit flops** – *Audrey Moss*

At least two if not more infamous examples of micros that lost the war to other computers, even within the same companies!

### **Prodigy Reloaded** – *Phillip Heller*

Prodigy Reloaded is a faithful re-implementation of the Prodigy online service backend, allowing the original client to work again. Experience the Prodigy service again, as you might have in 1989.

### **Random British Computers** – *Chris Satterfield*

A selection of British Computers.

### **Rabbit Hole Computing** – *Alex Perez*

Rabbit Hole Computing designs and manufactures advanced SCSI and IDE/ATAPI CD-ROM emulators.

### **J-PC ZONE** – *Duncan Mac Dougall*

Japan had its own world of personal computers that did not reach Western shores. This exhibit aims to show several different running examples of these impressive platforms that most of the West missed. We will be demonstrating at least one playable example of an X68000, a PC-98 series system, an MSX2+, a PC-88, and an FM-TOWNS.

### **Turn It Up to 11** – *Steve Toner*

Harken back to those thrilling days of yesteryear when PDP-11s rules the planet and 8-bit microprocessors were just toys. Exhibit will include genuine PDP-11/73 and PDP-11/53 processors running with a combination of original and new (DIY) hardware.

### **Zhinü's Portables 'n All in Ones** – *Tyler Hayes*

Demoing various 80s and 90s portable and All in One machine in fursuit.

### **Apple-1 Replicas** – *Daniel Kottke*

Apple-1 replicas with CFFA autoboot and NFF authentication.

### **Bitfixer's Bits and Bytes** – *Michael Hill*

A collection of old computers and modern gadgets for them.

### **SimCity for Unix** – *Antoni Sawicki*

Classic SimCity for Solaris/HPUX/IRIX/Dec.

### **Keep Calm and Carry On (loading)** – *Steve Crozier*

British computers from the 1980s. Acorn, Sinclair and others.

### **GT40 Lunar Lander** – *Scott Swazey*

This exhibit will showcase a working GT40 running Lunar lander.

### **The Intel 8080, 50 Years and Counting** – *Francis Bauer*

Introduced in April 1974, the Intel 8080 8-bit microprocessor played a large role in starting the microcomputer industry. Many of the early systems were based on the Intel 8080 and the subsequent Intel 8080A microprocessor.

### **The IBM 3270 Terminal Evolution** – *Dave K.*

A demonstration of IBM's iconic 3277, 3278, and 3279 mainframe terminals connected to an emulated VM/370 host over coax running 3270 protocol with attached control unit.

### **World's Largest Mac Plus (aka Mac Plus Plus)**

– *Jason Jackrel*

I built the world's largest Mac Plus at 237% scale. It's huge, it looks visually identical to a real 87 Mac Plus except for how large it is. Includes functional keyboard and mouse at scale too. Runs Mac System 7 like a Mac Plus should. Fully 3D printed one-off build.

### **Unix Workstations** – *Rico Pajarola*

A collection of Unix workstations and X terminals from the 1980s and early 1990s.

### **Cube³** – *Jordan Hayes*

A variety of notable cubed computers.

### **Genesis DOES!** – *Sega Sonicfan*

Vintage 90s store display + Segasonicfan Designs Retro PCB Add-Ons! A celebration of all things 90s Sega, there will be a display of boxed Sega consoles and accessories from the 90s! Also going to showcase new and upcoming designs by SSFD for retro game console add-ons (some available for purchase.)

### **Consoles as Computers** – *Mia Brandenburg*

At their hearts most video game consoles are PCs. The specialization of the hardware and the choice of inputs and software often is what makes us see these as only tools for leisure, not for work. This exhibit showcases consoles from the 70s to the 90s with a focus on the gray area between game consoles and personal computers.

### **Commodore PET Collection** – *Chuck Hutchins*

A collection of Commodore PET computers and peripherals.

### **Radio Shack and Tandy "Portable" Computers**

– *John Riney III*

It's 1981 and you've got business to do, but not a lot of budget. Luckily, your local Radio Shack store has a variety of systems that will get the job done and expand your definition of the word "portable." Come play with them and learn how they affected mobile computing for decades.

## Exhibitors, continued...

### **CoPiCo: WiFi & More for the Tandy Color Computer**

– *Thomas Shanks*

We'd like to showcase our progress on creating a cartridge for the Tandy Color Computer that is capable of providing access to the Internet over WiFi, emulating a ROM (game/app) cart, booting over the network, and, eventually, bus capture & breakpoints!

### **Silicon Graphics "Twin Tower" Workstation**

– *Zachary Hardesty*

The Silicon Graphics Power Series (and Professional IRIS) were housed in a very distinctive split pedestal desk. This machine was originally configured as a 4D/220, but is currently housing the boards for a Silicon Graphics Crimson!

### **C64 - Floppy Disk Paradise** – *Joeri van Haren*

Bring your old forgotten floppies and a USB stick and we'll help try to preserve your (Commodore) floppies for the ages to come!

### **The Commodore Artist** – *Theodoro Koulis*

A showcase of drawing and painting tools for creating art on Commodore computers.

### **Vintage Computer Aided PCB Homebrewing**

– *Steve Surowinski*

Presentation of printed circuit board design and homebrewed prototyping using 1990 vintage PCAT and Roland DXY800 plotter transferring artwork directly onto double sided copper clad laminate.

### **Rebuilding the TRS-80 Model 1** – *Marcel Erz*

Explore my faithfully recreated TRS-80 Model 1 systems. Discover how my complete range of replicated parts, cases, keyboards, and PCB boards can breathe new life into your Model 1. Whether you're repairing a beloved old system or building one from scratch, my exhibition showcases the perfect blend of nostalgia and modern engineering.

### **Mac vs. PC** – *Andrew Watterson*

However you feel about Apple's platforms, they've always existed alongside - and had to interoperate with - many others. This exhibit will show off four systems that demonstrate the range of approaches Apple took from the mid-80s through the 2000s.

### **Open Source CRT Monitor** – *Thomas Daede*

This monitor features a custom-made chassis driving a CRT monitor, compatible with many vintage video sources. Learn how a CRT functions, and the challenges of creating electronics to drive one.

### **Gotta Go Fast** – *Jeffrey Luan*

Vintage Computer Acceleration Displaying a selection of vintage accelerators/CPU upgrades running in Apple/Macintosh and IBM/x68 computers from the 80s-90s.

### **Pac-Man Arcade PCB Replica** – *Logan Greer*

This exhibit focuses on sharing my replica projects, such as a new Pac-Man PCB replica and other replicated Arcade electronics and PCBs.

### **Pen Based Computers** – *Thomas Conrad*

Exhibiting Apple Newtons. By allowing guests to actually use the Newton, they can experience the Newton for themselves.



*The role of events like VCF in the ecosystem of retro-technology enthusiasts can't be overstated. They are gathering places for enthusiasts, each with a different desire in their interactions. There is value in both strict preservation and direct access to retro-technology, and understanding how they can interact, to further both long-term preservation and interactive recovery of the context of use. Such collaborations can only help to illuminate the history of computers for everyone.*

**CHRIS GARCIA**  
CURATOR, COMPUTER HISTORY MUSEUM

# Hello, world!



**Welcome to the Vintage Computer Festival West 2024.** You're about to embark on a fantastic family-friendly adventure backward in time.

You will see and touch dozens of historic computers from many decades gone – everything from big iron to eight-biters. You'll also experience some creative new replicas, modern enhancements, and new retrothemed systems. You will meet some historic people, learn their insider stories, and perhaps pick up our nerdily awesome t-shirt! While you're here, remember to tour the amazing museum all around us: they're a terrific host and worth a return trip. Be sure to talk about us online: #vcfwest

Happy computing,  
- The Vintage Computer Federation

Vintage Computer Federation

Our mission is to preserve computing history through education, outreach, conservation, and restoration. We strive to accomplish this through family friendly hands-on activities at our museum, at regional and global events, and by fostering and nurturing the expansion of our on-line and in-person communities. The Vintage Computer Federation is a 501(c)3 non-profit.

In addition to Vintage Computer Festival West, we also own VCF East (New Jersey each spring). There are also Vintage Computer Festivals independently run that we encourage everyone to attend, including:

VCF Southwest (<https://www.vcfsw.org/>), VCF Midwest (<https://vcfmw.org/>), and VCF Southeast (A part of SFGE) (<https://gameatl.com/>)

If you are interested in creating your own chapter or festival, please contact us at [info@vcfed.org](mailto:info@vcfed.org).

**Website:** [vcfed.org](http://vcfed.org) | **VCF Forum:** [forum.vcfed.org](http://forum.vcfed.org)

**Facebook:** <https://www.facebook.com/vcfederation>

**YouTube:** <https://www.youtube.com/@vcfederation>

**Twitter:** <http://www.twitter.com/vcfederation>

**Instagram:** <http://www.instagram.com/vcfederation>

**Discord:** <https://discord.gg/32maJ6gddU>