

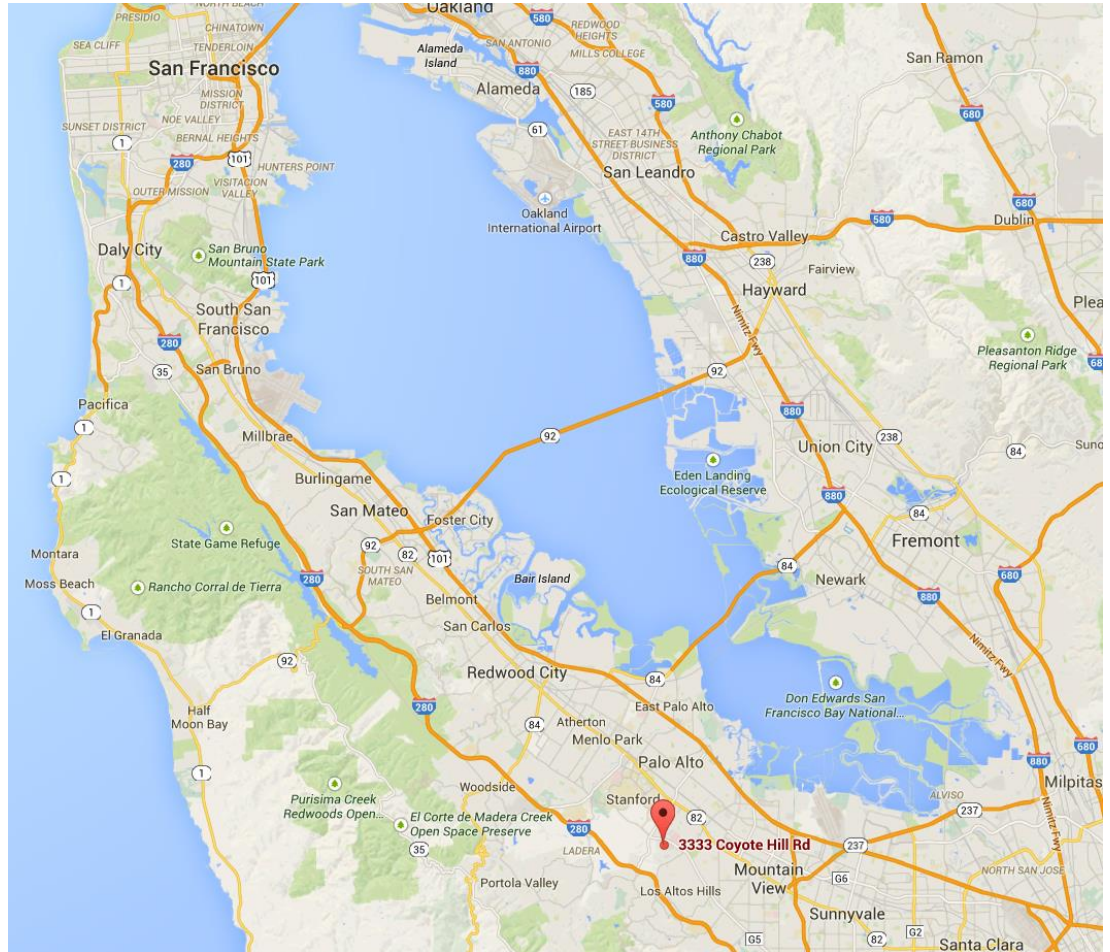
# Xerox PARC 1970-80

## “the office of the future”

Michal Winczer

# Čo to je? Kde to je?

PARC =  
Palo Alto  
Research  
Center



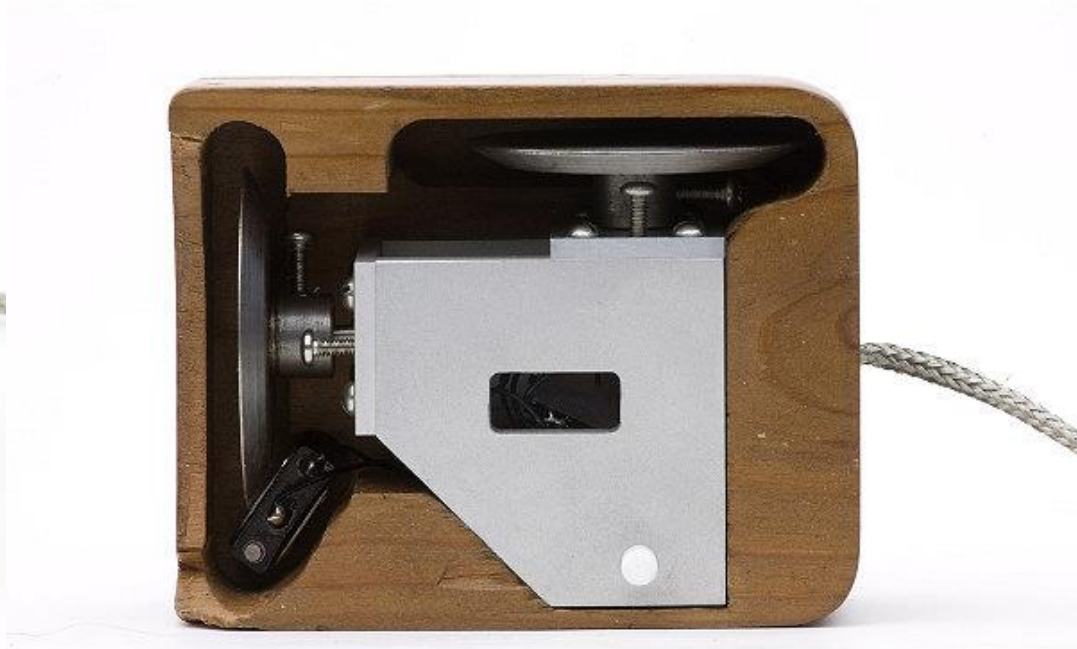
# Čo bolo pred tým

- Vojna vo Vietname
- Hnutie hippies
- Úspechy XEROXu s kopírkami
- Neexistencia start-up firiem

# Čo bolo pred tým

- ARPA (Advanced Research Projects Agency) od 1958
  - Poskytovala granty na rôzne výskumné projekty, napríklad:
    - Douglas Engelbart a kol. (SRI), myš , bitovo mapovaná obrazovka, hypertext, počítačová podpora spolupráce, GUI – všetko v 60. rokoch 20. storočia.
    - „internet“ 1969 (SRI, UCLA, UoU, UCSB )
  - Bob Taylor bol riaditeľom ARPA pred 1970

# Počítačová myš.



US patent Doug Engelbart a  
Bill English (SRI),



# Zrod PARC

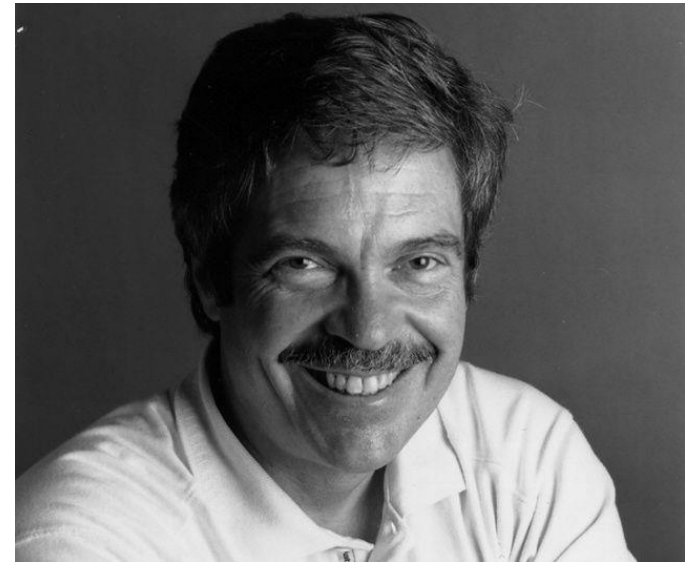
- 1969 návrh na vytvorenie a presvedčenie vedenia XEROX, že to má zmysel
- Najatie vynikajúcich manažérov. Kľúčový bol Bob Taylor, ktorý z predchádzajúceho pôsobenia v ARPA poznal mnoho významných odborníkov



Annie Leibowitz, 1972, Rolling Stone

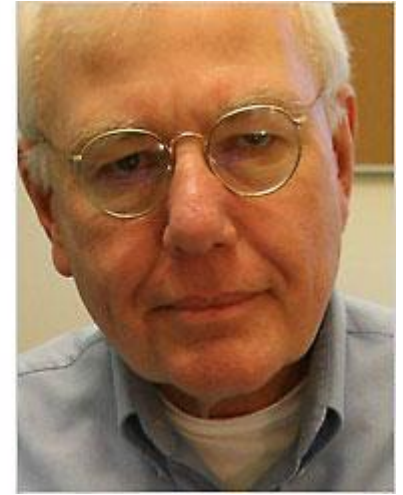
# Alan Kay

- „reactive engine“ v PhD práci, od 1972 **Dynabook** :dynamické médium pre kreatívne myslenie (dnešný tablet)
- Nekonečný zdroj nápadov
- **Smalltalk** (pôvodne to mal byť program. jazyk pre deti) spôsobil boom OOP
- Vytvoril LRG s cieľom vytvoriť programátorské prostredie, v ktorom „simple things would be simple, and complex things would be possible.“





# Charles Thacker Butler Lampson



- **Distributed personal computing**
- **ALTO** (interim Dynabook), realizácia vízie osobného počítača so softvérom
  - s GUI,
  - ovládaním myšou,
  - prepojenie počítačov medzi sebou



# Alto

- nov.1972-apr.1973
- 128kB pamäť, neskôr 512kB
- Ethernet 3Mb
- Bit-map display 606x808x1
- mikroprogramovateľný (170ns/ $\mu$ inštr, 1-3  $\mu$ s/inštr),
- programovateľný v BCPL, neskôr Smalltalk, LISP, Mesa





# Gary Starkweather

- **Laserprinter**, 1969-1972, 1str/s
- B. Lampson a R. Rider implementovali generátor znakov
- **Ethernet based printer server**, EARS(Rider), 1974, 500 dot/inch, 1str/s
- rastrová grafika
- neskôr jednoduchšie verzie 300 dot/inch 100str/s



- **File server**

# Aplikácie

- Bravo, **textový editor**, Charles Simonyi a Butler Lampson, 1974-8
  - WISIWIG (viacero rezov písma)
- Laurel, **e-mail systém**, 1978
- Nástroje na kreslenie a návrh log. Obvodov, 1975



READY: Select operand or type command  
Last command was LOOK  
{A\_substa...!\_way↵} {Computer... ↵XEROX↵}\$

## Personal Distributed Computing The Alto and Ethernet Software

*Butler W. Lampson*  
*Digital Equipment Corp. Systems Research Center*

### Abstract

The personal distributed computing system based on the Alto and the Ethernet was a major effort to make computers help people to think and communicate. A complex and diverse collection of software was built to pursue this goal, ranging from operating systems, programming environments, and communications software to printing and file servers, user interfaces, and applications such as editors, illustrators, and mail systems.

### 1. Introduction

A substantial computing system based on the Alto [Thacker et al.

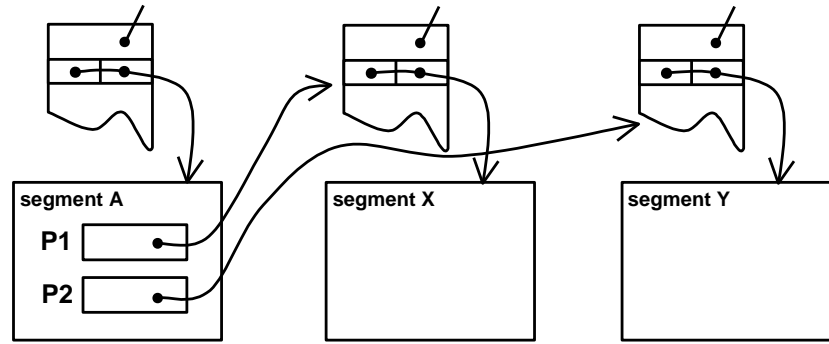
Computer Science Laboratory  
Xerox Palo Alto Research Center  
3333 Coyote Hill Road  
Palo Alto, California 94304

# XEROX

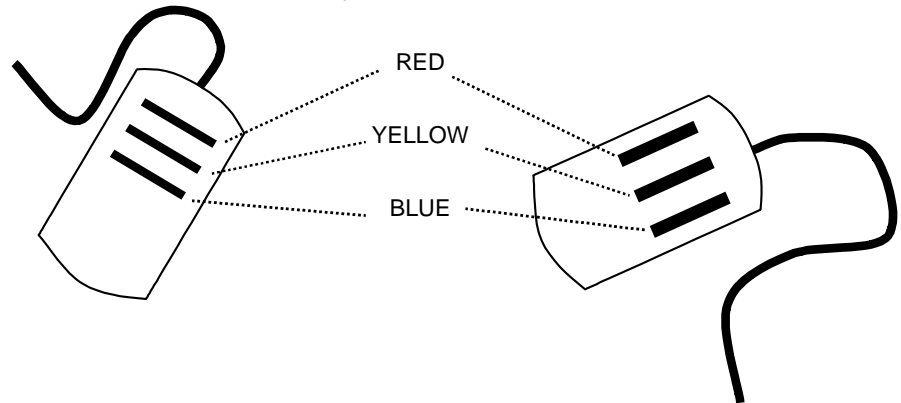
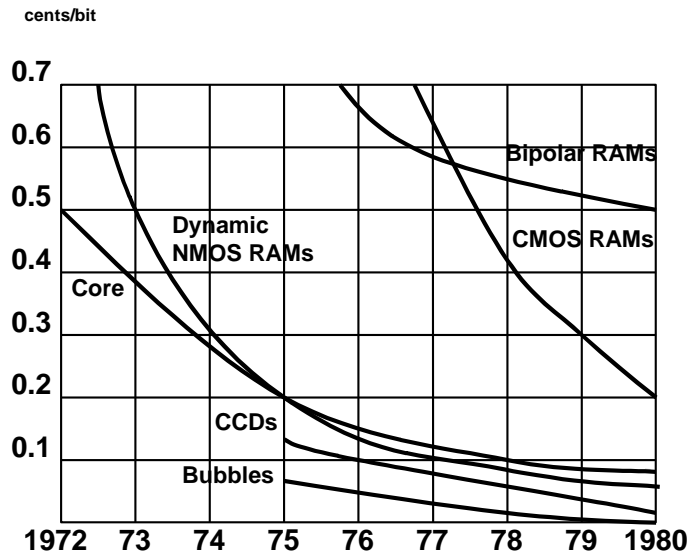
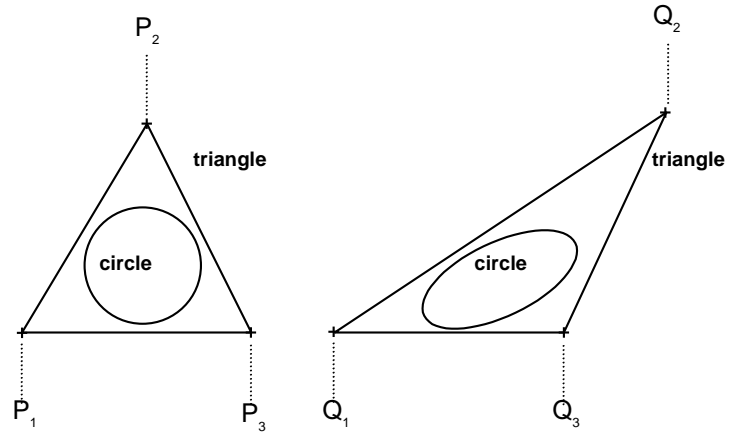
Glen J. Culler  
608 Litchfield Lane  
Santa Barbara, CA 93109

Dear Glen:

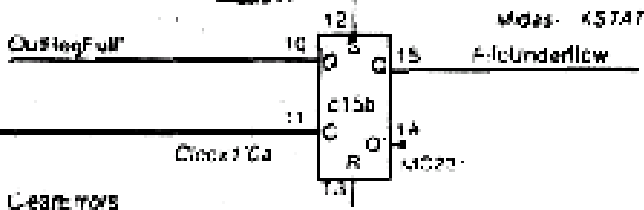
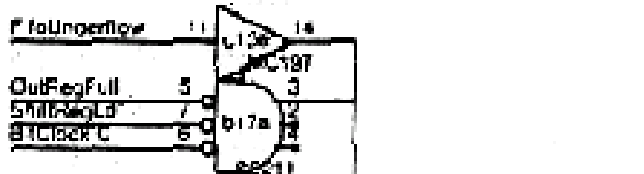
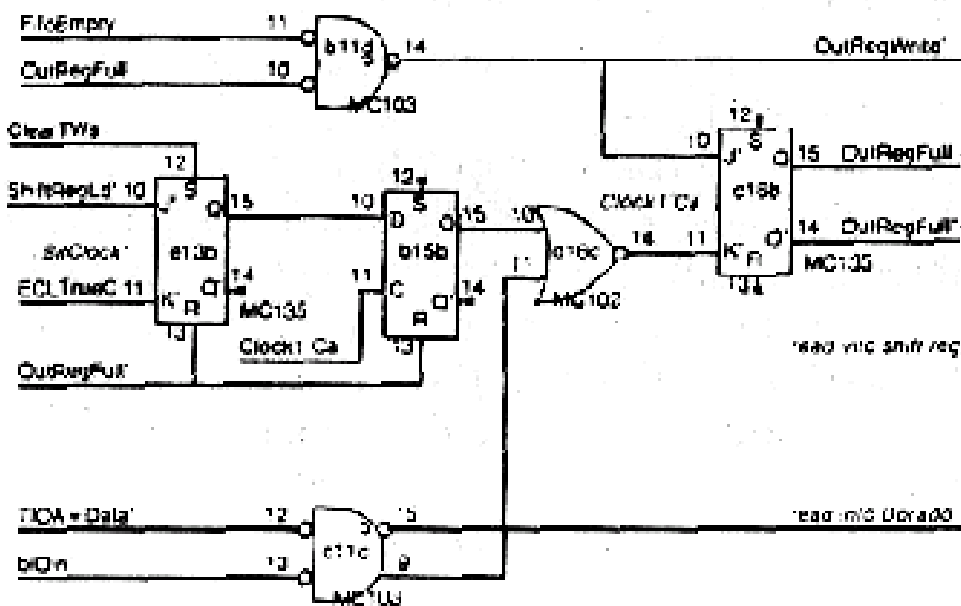
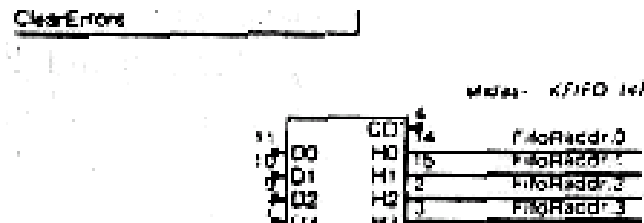
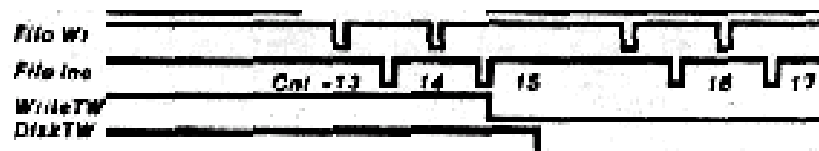
This is a follow-up to earlier correspondence you received from Alan Perlis regarding the ACM Conference on the History of Personal Workstations. As you know, the conference is scheduled for January



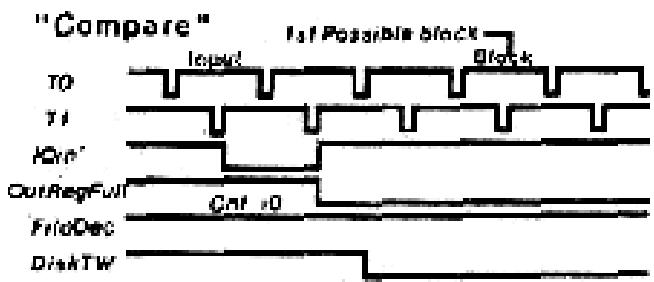
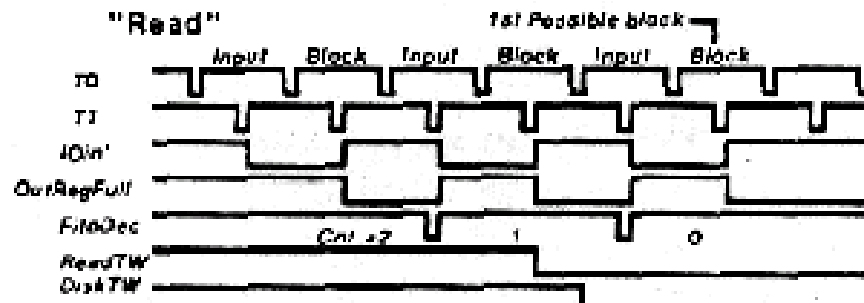
The transformation is specified by *six* points (say, in the order of input:  $P_1, P_2, P_3, Q_1, Q_2,$  and  $Q_3$ ). It is defined by the mapping of the source triangle  $P_1P_2P_3$  into the target triangle  $Q_1Q_2Q_3$  as illustrated here:







Input timing

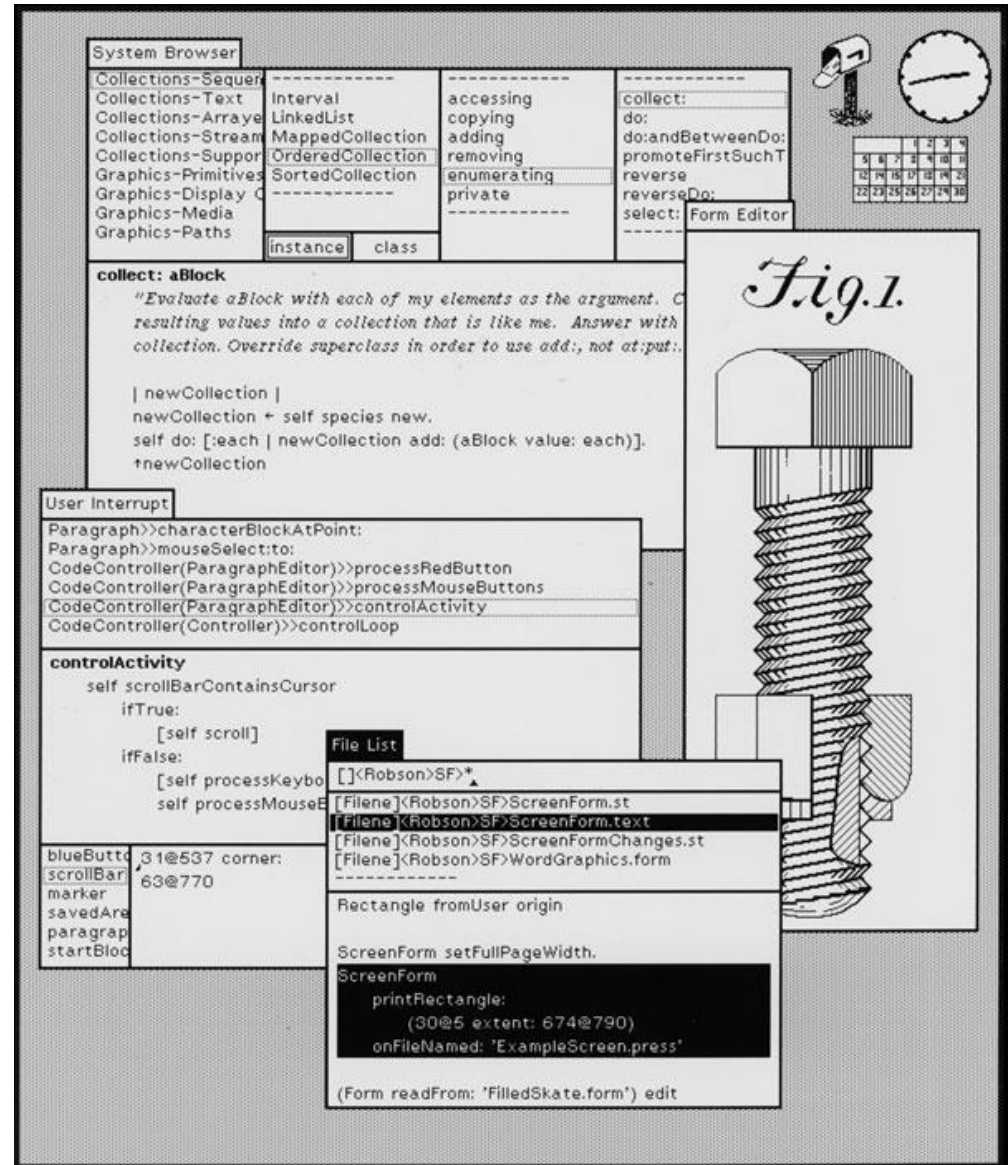


XEROX PARC	Project Dorbac	Drawing FIFO Control	File TriccnD08.sil	Designer Roger Bates	Rev C1	Date 9/24/79	Page 14
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# GUI

- **Okná**, mohli sa prekrývať, posúvať
- **Ikony**, alternatíva k otvorenému oknu
- **pop-up okno**, pod kurzorom

Prvé použitie v Smalltalk



- Ovládanie myšou
- Klikanie
- Menu button
- Scroll bars



# A Cedar Toolbox

Here are a number of useful (and fun) tools. To find out more about their use, check out the whiteboards given below (especially the *Tools* whiteboard for documentation)

Basic	Tools	Comments	Interfaces	Type cutters Putting it all of together	Cloud	Keyboard
Performance Wats When you really need to know where the resources are going	Performance tools	Debug Tool What is this crazy system doing?			Debug	
Need an Interpreter? To evaluate Cedar expressions only	Interpreter	MISP If you insist on using LISP in Cedar!!			Misp	
Watch Watch your MISP and what	Misp	Cedar Mail Tools For sending and receiving mail			Mailtools	

## ScratchPad:



### MoveToMsgSet(s) Current/Next DelFromMsgSet

11-Aug-82	Morris.PA	Change your routing tables
3-Dec-82	Ed Lazows...	Mail Server
3-Dec-82	Ed Lazows...	More Service
25-Nov-82	cattell.pa	phones & addresses

Msg: cattell.pa 1 3#170@25-Nov-82 16:44:14 PST

### Answer Forward DeleteMsg AddTo RemoveFrom FullText Freeze

Date: 25-Nov-82 16:44:14 PST  
 Subject: phones & addresses  
 From: cattell.pa  
 To: CedarDatabase+pa  
 Reply-To: cattell.pa  
 Categories: Addresses

I've made two programs for printing out phones and addresses sorted by people's last names: CedarDB. It makes a little pocket listing suitable to put in your wallet (see me for example, assumes you have phone and address relations such as the ones I use in PDB, and it only people in your database that (1) have phone numbers and/or addresses specified, and (2) are connected by a member relation to a "phone list" entity (in case you have some you want

Taskbar area containing icons for various applications and utilities:

- Sil
- Watch
- Cedar Database Documents
- lma.sis
- Preview
- St
- Changes
- Cedar
- Command Tool NO # 111
- Menu
- Watch
- kat
- Ward & Now
- Edit Tool
- GF Tool

# Video

Reklama, cca 1min

- <https://www.youtube.com/watch?v=M0zgj2p7Ww4>

Aplikácie: pošta, text a graf. editor, browser, hra (cca 10min)

- <https://www.youtube.com/watch?v=IUcwt0WbSaA>

Xerox demo pre Apple, Smalltalk (cca 1min)

- <https://www.youtube.com/watch?v=NxEmJu8OSug>

# nasledovníci

- Pracovné stanice: Apollo, Sun, Tektronix, DEC, LispMachine, Symbolics
- Osobné počítače: Apple Lisa, Macintosh; Xerox
- Grafické terminály
- Ethernet/IEEE 802.3
- Sieťové protokoly TCP/IP
- Laserové tlačiarne
- Tlačové jazyky: Interpress, Adobe Postscript, PDF
- 3Com file server, Apple Laserwriter print server
- GUI: Macintosh, MS Windows
- Editory: MacWrite, MS Word, MacPaint, MacDraw



# Zdroje

- <http://www.scaruffi.com/svhistory/sv/chap84.html>
- A History of Personal Workstations, ed. Adele Goldberg, ACM Press, 1988
- <https://www.parc.com/about/>



# Prečo to všetko nie je aj teraz XEROX?

- Menežment firmy sa sústreďoval na vtedajšie produkty – tlačiarne.
- Nedocenili význam vzniknutých produktov, neusilovali sa ich komerčne využiť.
- výskumníci začali byť frustrovaní, odišli a začali svoje predstavy realizovať inde, buď vo vlastných firmách 3Com, Adobe, ... , alebo v už existujúcich firmách, Apple, MS, DEC,...