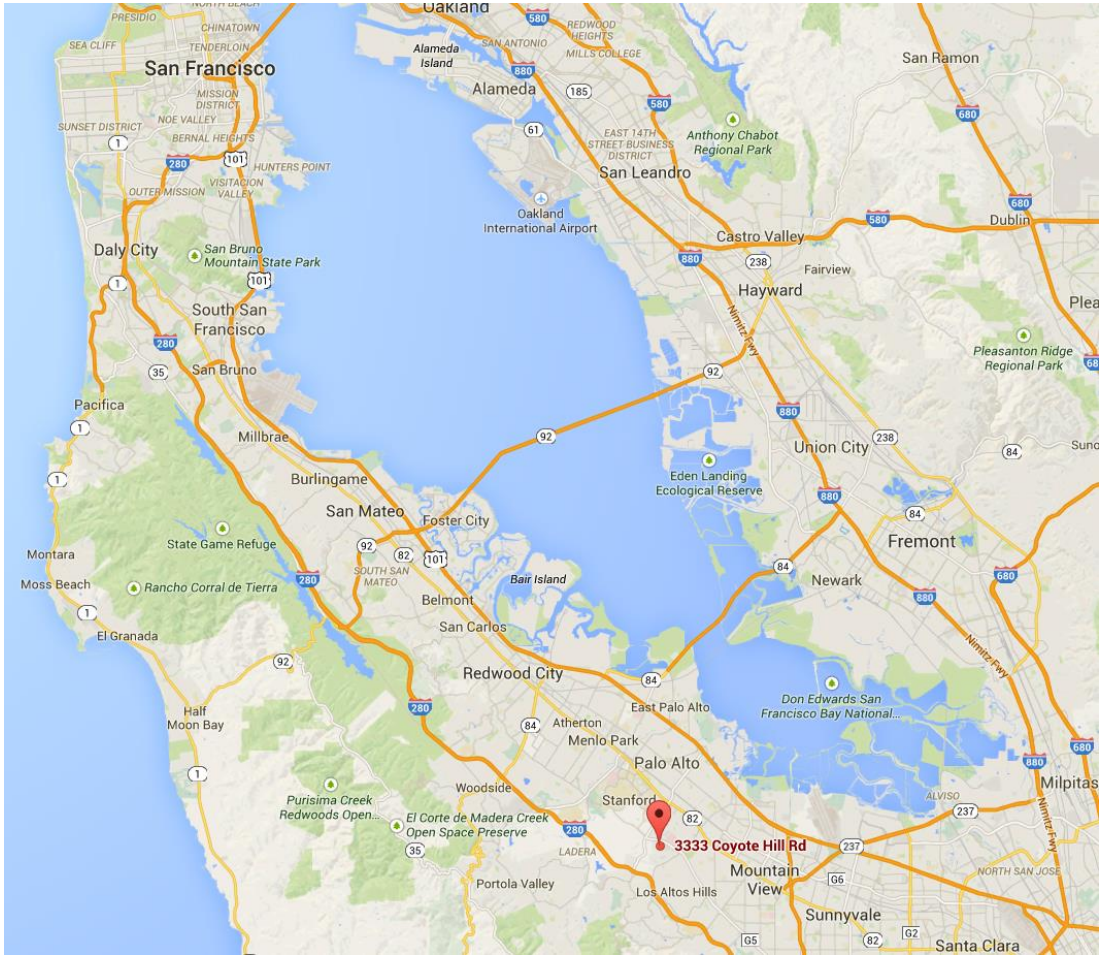
Xerox PARC 1970-80
“the office of the future”

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.

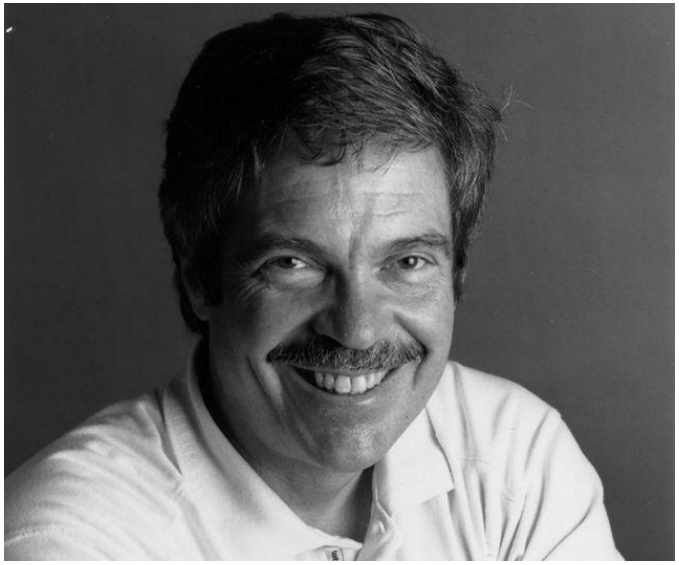
US patent Doug Engelbart a
Bill English (SRI),

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

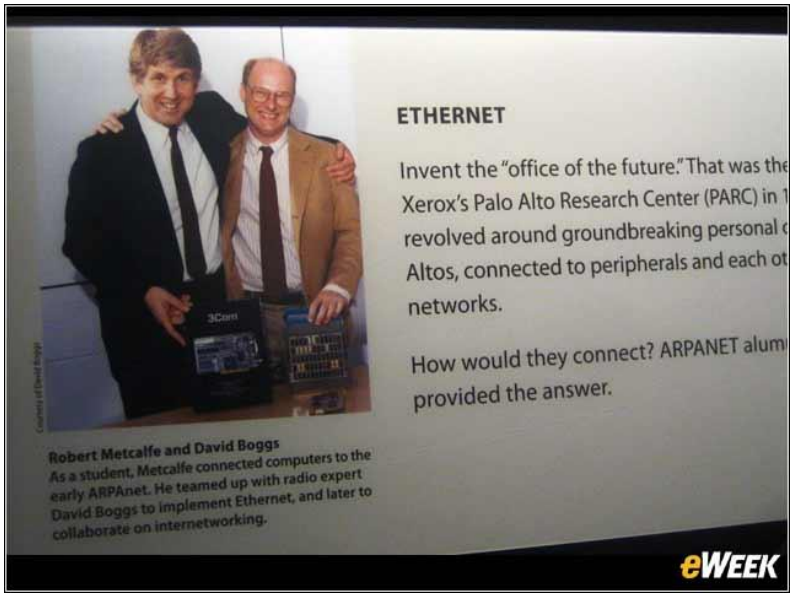
- **Distributed personal computing**
- **ALTO** (interim Dynabook), realizácia vízie osobného počítača so softvérom
  - s GUI,
  - ovládaním myšou,
  - prepojenie počítačov medzi sebov

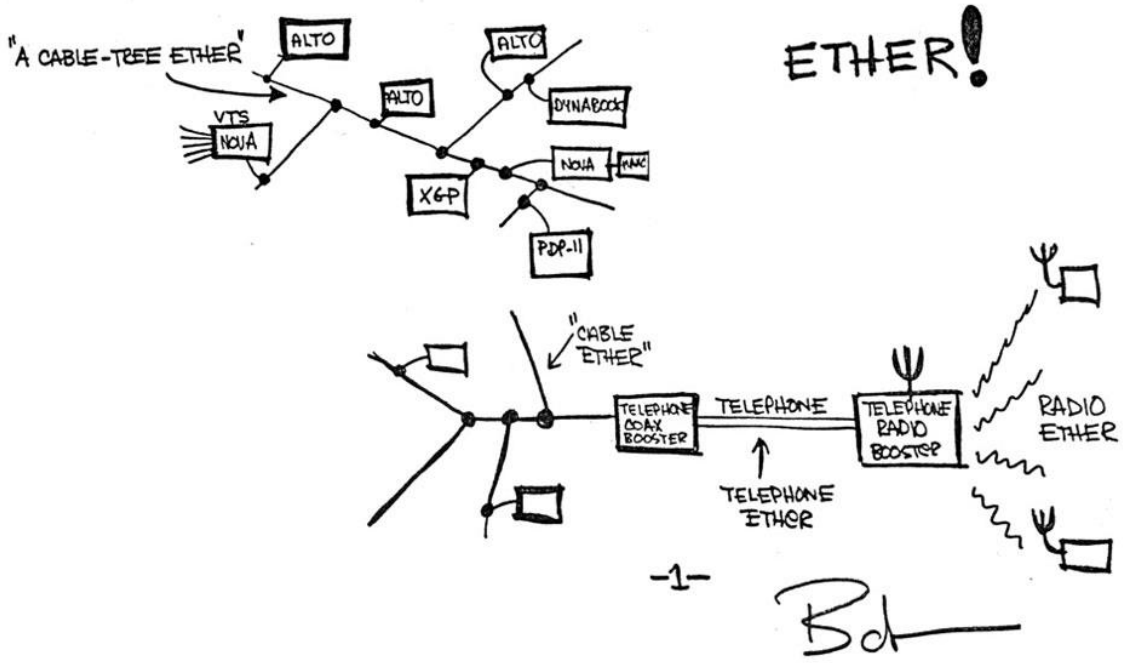
Alto

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

Bob Metcalfe
David Boggs

- Ethernet, máj 1973-dec 1973





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.

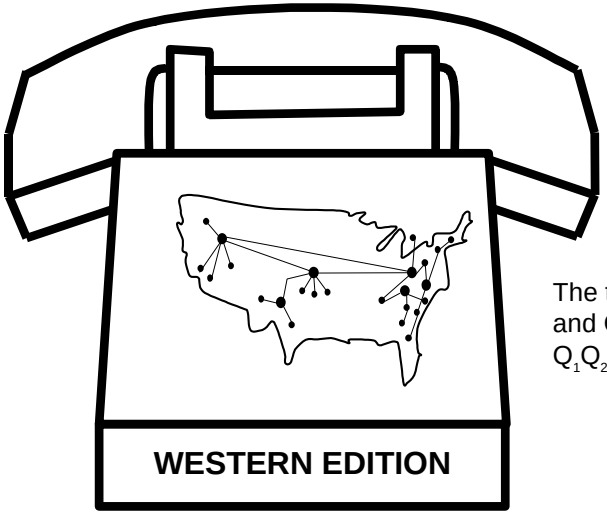
Computer Science Laboratory
Xerox Palo Alto Research Center
3333 Coyote Hill Road
Palo Alto, California 94304

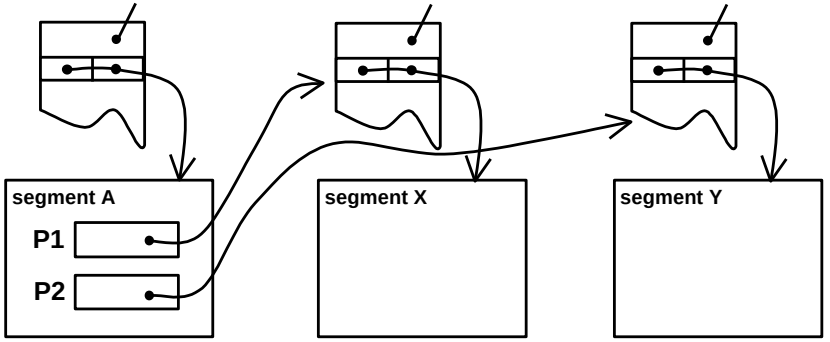
XEROX

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

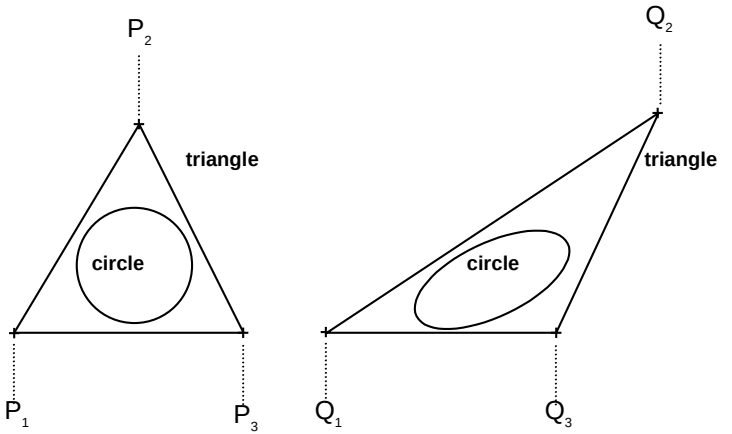
Dear Glen:

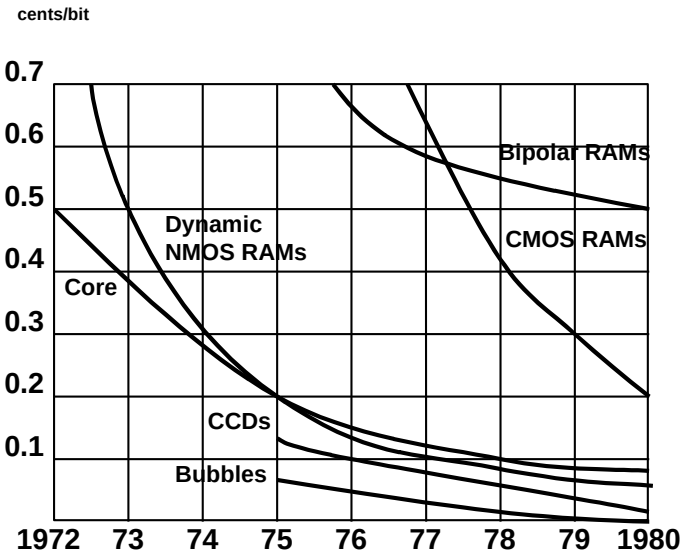
This is a follow-up to earlier correspondence you received from Alan Perlis regarding the ACM Conference on the History of Personal Workstations. As you know, the conference is scheduled for January

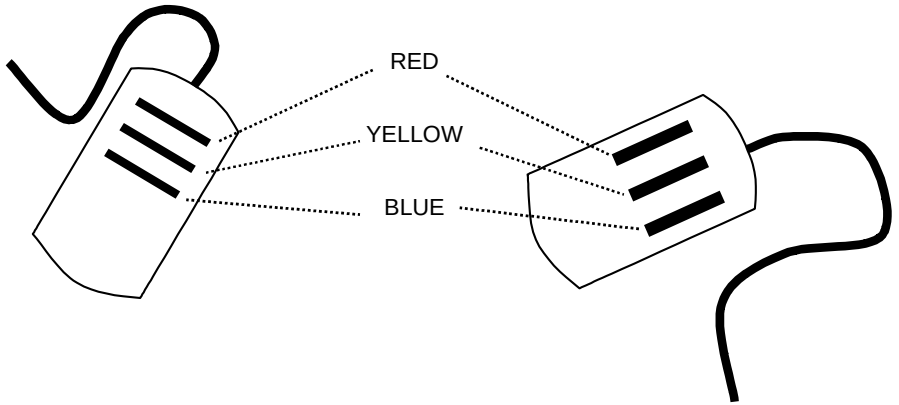


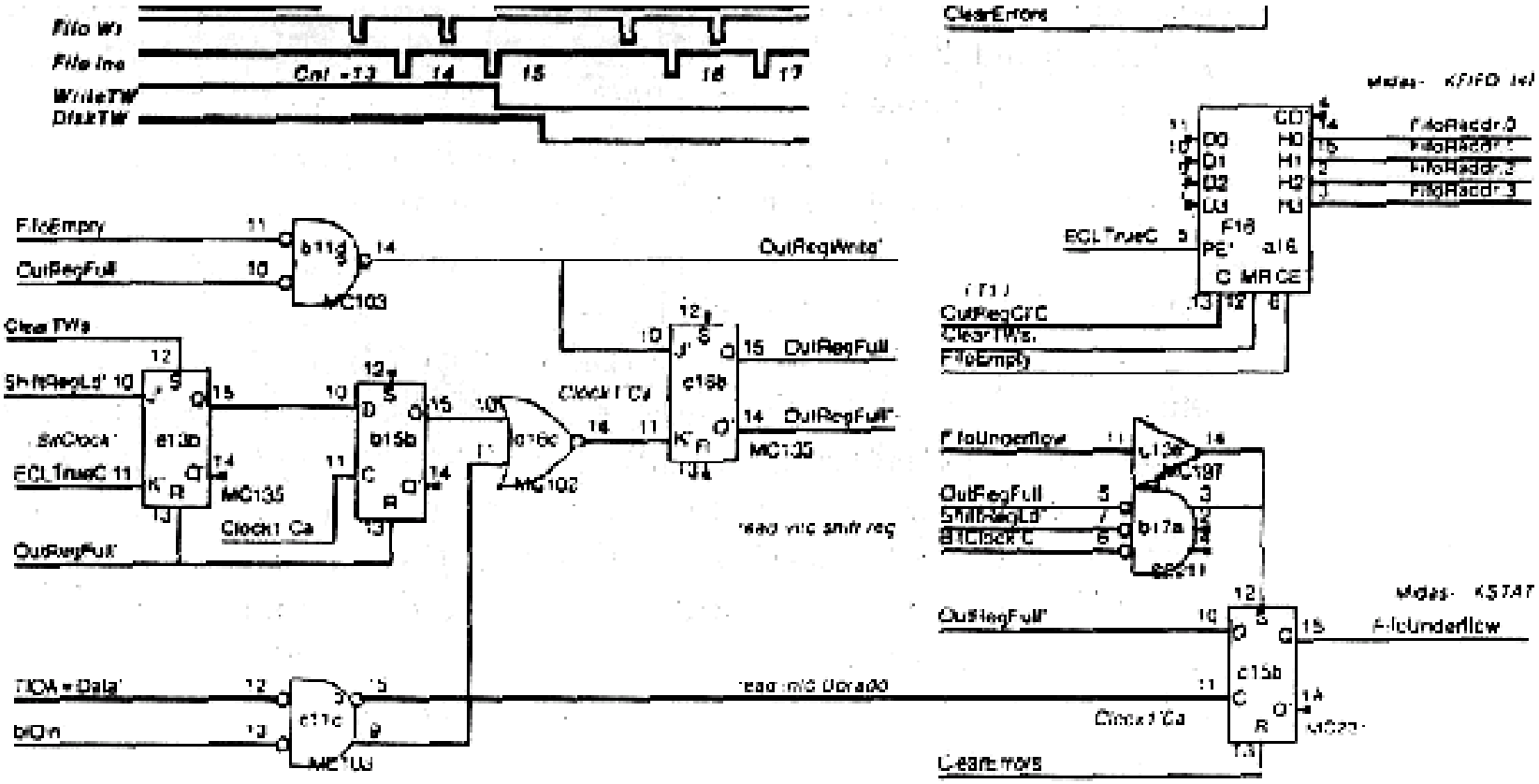


The transformation is specified by *six* points (say, in the order of input: P_1, P_2, P_3, Q_1, Q_2, and Q_3). It is defined by the mapping of the source triangle $P_1P_2P_3$ into the target triangle $Q_1Q_2Q_3$ as illustrated here:

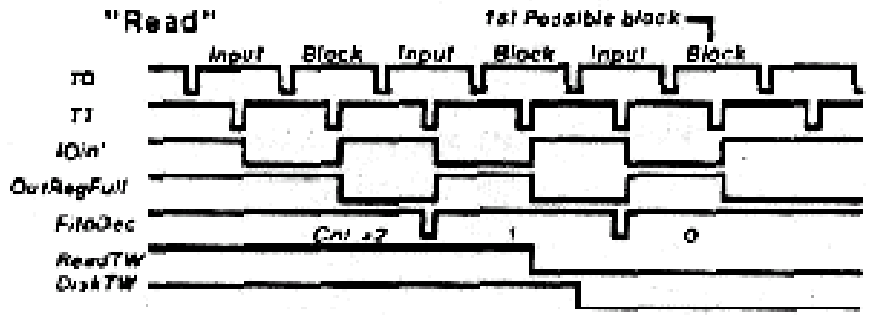


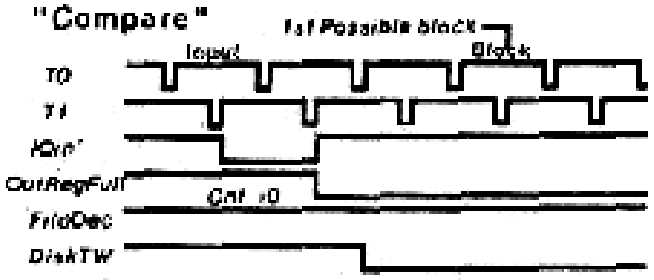






Input timing



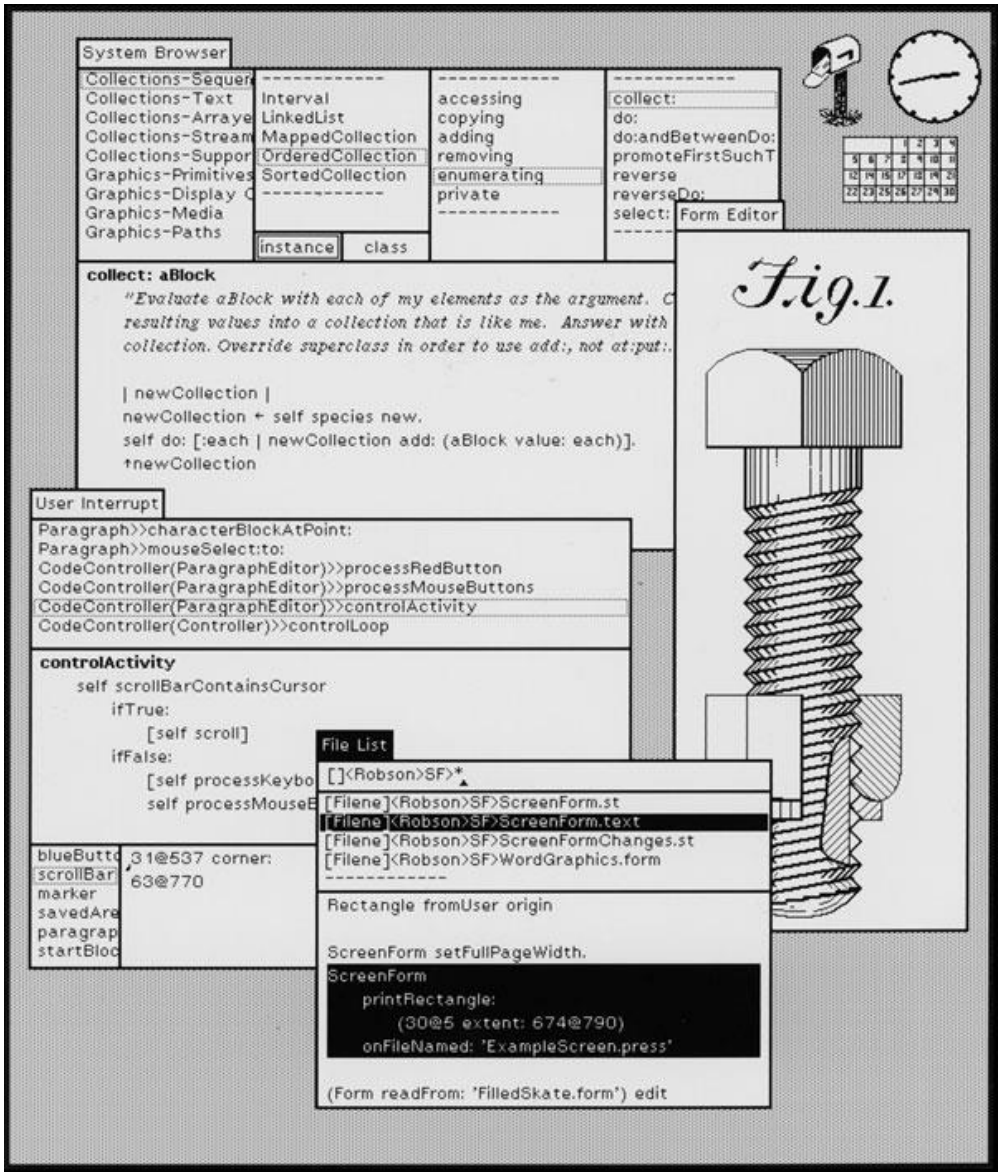


XEROX PARC	Project: Doraac	Drawing: F I F O Control	File: TriconD08.sil	Designer: Roger Bates	Rev: C1	Date: 9/24/79	Page: 14

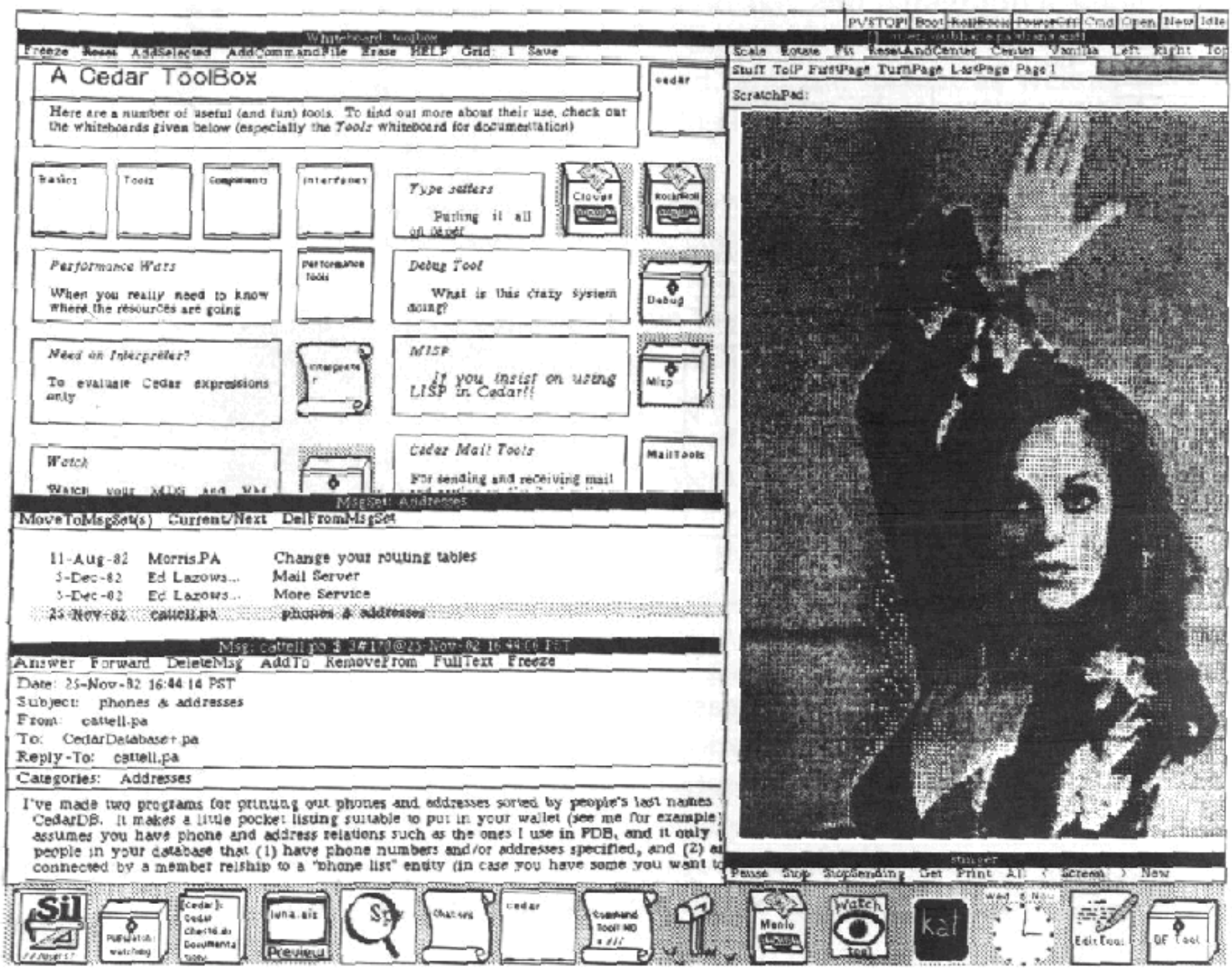
GUI

- **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)
Performance Watts
When you really need to know where the resources are going
Debug Tool
What is this crazy system doing?
Mesa on Interpreter?
To evaluate Cedar expressions only
MISP
If you insist on using LISP in Cedar!!
Cedar Mail Tools
MoveToMsgSet(s) Current/Next DelFromMsgSet
11-Aug-82 MorrisPA Change your routing tables
5-Dec-82 Ed Lazows... Mail Server
5-Dec-82 Ed Lazows... More Service
25-Nov-82 cattell.pa phones & addresses
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) a
connected by a member relship to a "phone list" entity (in case you have some you want to
Scale Rotate Fit ResetAndCenter Center Vanilla Left Right To
ScratchPad:
Pause Stop StopSending Get Print All < Screen > New

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,...