Preserving our Heritage NZ-made Computers

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Outline

- NZ-made Computers
  - Record what is known
  - Main content of written paper

- Preserving our Heritage
  - State of play country-wide
  - Displays at Auckland
  - The Poly Project at Otago

How this Started

- TradeMe "Vintage Computers"
- Houseful of computers for sale at Rotorua - estate of Paul MacDiarmid
- We met here last November to help executor Marcus Boielle sort it out
- He donated MDL and Poly computers (thanks)
- We pledged to return, tell the news

NZ-made Computers

- Window of opportunity
- After μ-processors, 1975
- Before PC a commodity, 1986
- From engineering – MDL
- University start-ups, Decade & Aamber
- From education - Poly

Our Range of Interest

- Not embedded systems
  - They have a long and continuing history in NZ

- Sold as a general purpose computer
  - Even if targeted at applications

- Not compatible replacements for commodities
  - Another long and continuing story

MDL - Microprocessor Developments Ltd.

- This is where RWD interest started
- Had visited MDL, been to opening in Pah Road by David Lange
- Very interesting but forgotten already

- Company founded by John Lovelock
  - Who is still with us

MDL-2

- Brain child of John Lovelock
- Engineering applications
- Saw opportunity, founded MDL 1978
- Had agencies for important products – Epsom
- Designed and sold their own computers.

Computer from Rotorua

MDL-3

- Computers used Z80, S100, CP/M
- Different versions, finally MX
- Multi user, Z80 per screen, sharing hard disk
- Sales into accounting
- Education packages
- Territorial Local Authorities contract

Class set at Auckland Grammar

MDL-4

- Over 200 computers sold
- Over $5M turnover, 30 employees
- Moving into embedded systems in late 80's
- EFT/POS terminal for BNZ
- Brought down by BNZ collapse

MX Series – Processors and Winchester disk

Two Computers associated with University of Auckland

- News to us!
- Students self-taught computing
- Set up companies after graduating
- From Physics – Technosys
- From EEE – Computer Specialists Ltd
- Very different stories

Technosys

- Stewart Holmes, M.Sc. thesis student
- Partner Paul Gillingwater, AIT
- Technosys founded 1980
- Designed prototype in student office
- Moved out to Parnell to manufacture
- Aamber
- DFC finance

Aamber Pegasus

- Intended for the hobbyist
- Ingenious low-cost hardware
- Lot of software written, OS, 4 languages
  - but "techo" machine
- Around 100 sold
- 20 employees at max
- Collapsed at end of 1981
- Maintains a Loyal following

CSL Decade – 1983 ad.

DECADE COMPUTERS

Designed in New Zealand by Computer Specialist Limited, the Decade is a 64K RAM Desktop computer.

RAM can be expanded to 128K. CP/M is standard. Disk storage on the standard single disk drive is 800K. When used with the recommended hard disk options, the Decade can be expanded up to 40 megabytes. The Decade comes with a 5% service contract and carries a full 12 months guarantee. Decade also features a range of specially written software.

Computer Specialists

- Still operating:Compuspec Industries Ltd
  - staff of about 30
- Set up by Mark Eaton and Brett Caulton
  - 1981, two EEE grads

- Applications suites running on their computer-AEPB, Auckland Star, general accounting
- ~100 sold; moved back to embedded systems; made first NZ approved modem

Poly Origins

- Neil Scott and Paul Bryant Teaching EE at Wellington Polytechnic

- In 1980 they decide to develop a full computer specifically for the education market

- The prototype "Polywog" was built using off-the-shelf components

Polycorp

- Government promises to buy 1000 computers over 5 years ($10M), so long as they meet Education Dept. criteria

- Development Finance Corporation and Progeni Ltd form Polycorp

- Ian Roxburgh, Robert Platts, Alec Utting (Progeni Ltd), Neil Scott, and Paul Bryant (Wellington Polytechnic) bring the Poly to production

- Over 50 working machines in under 8 months!

Polycorp

- Huge effort by teachers and other producers

- 26-29 May 1981 The Poly is tested in Palmerston North present were:
    - Wellington Polytechnic
    - Department of Education
    - Wellington / Onslow / Tawa colledge

- The poly meets all expectations and enters production

Poly Hardware

- Poly:
  - 6809, SAA5050 teletext, 6840 clock, 6854 networking, 8-colour high resolution graphics

- Network design
  - Up-to 32 Poly connected to a Proteus

- Proteus:
  - 6809, Z80, 6840, 6854, 6821, WD1771 (FDC)
  - Dual 8" floppies (POLYSYS, FLEX, CP/M)
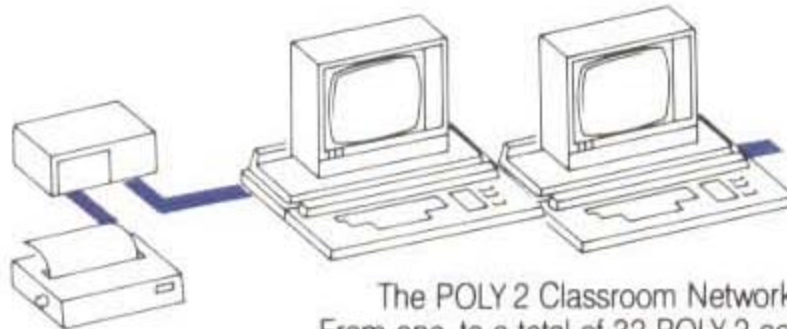
The POLY 2 Classroom Network System
From one, to a total of 32 POLY 2 computers

POLYSYS

- Based on industry standard FLEX
- Divided the OS into 2 parts:
  - Client side (on Poly)
    - Standard FLEX File Control Block (FCB) interface
  - Server side (on Proteus)
    - Standard FLEX program
    - Token Ring network – poll Poly for an FCB
    - Pass FBC to FLEX
    - Pass result back to Poly (via network)
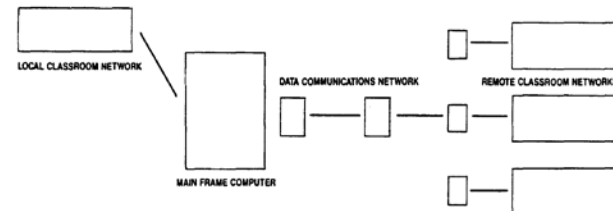
Poly - Amazing Vision (1980)!

- A network of computers in every school connected to a file server

- File servers connected via phone-lines to a centralized Mainframe

- Software build in pairs: teacher with programmer

DISTRIBUTED LEARNING SYSTEM

The POLY2 Learning System offers new opportunities for economical sharing of training and educational resources within organisations and administrations with existing D.P. networks.

LOCAL CLASSROOM NETWORK

DATA COMMUNICATIONS NETWORK

REMOTE CLASSROOM NETWORKS

MAIN FRAME COMPUTER
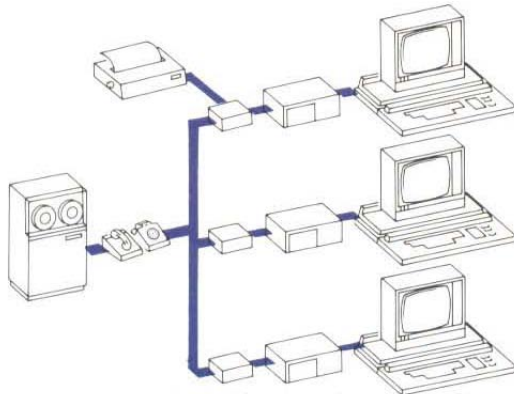
The POLY2 Distributed Learning System comprises any number of POLY2 Learning Systems connected to the D.P. Mainframe via the PROTEUS Computer modem port and suitable data communication equipment. Communications software, running in the PROTEUS Computer provides any necessary protocol conversion.
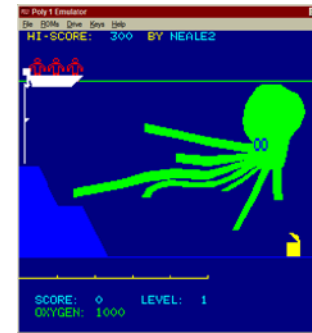
Using the capable interfacing ability of the PROTEUS Computer, any number of local POLY2 networks may share communications and centralised library facilities based upon the D.P. Mainframe, so making most economic use of existing data communications facilities.
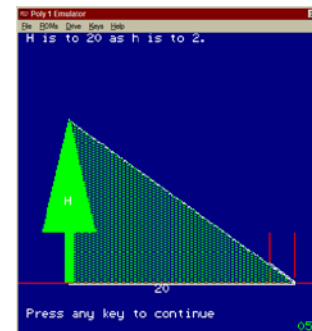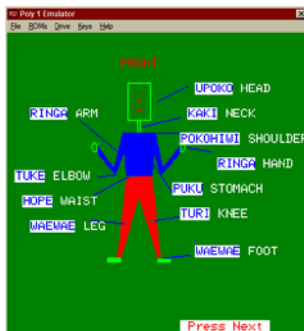
- We still **talk** of every NZ school on the Internet!

Poly Software

- Languages
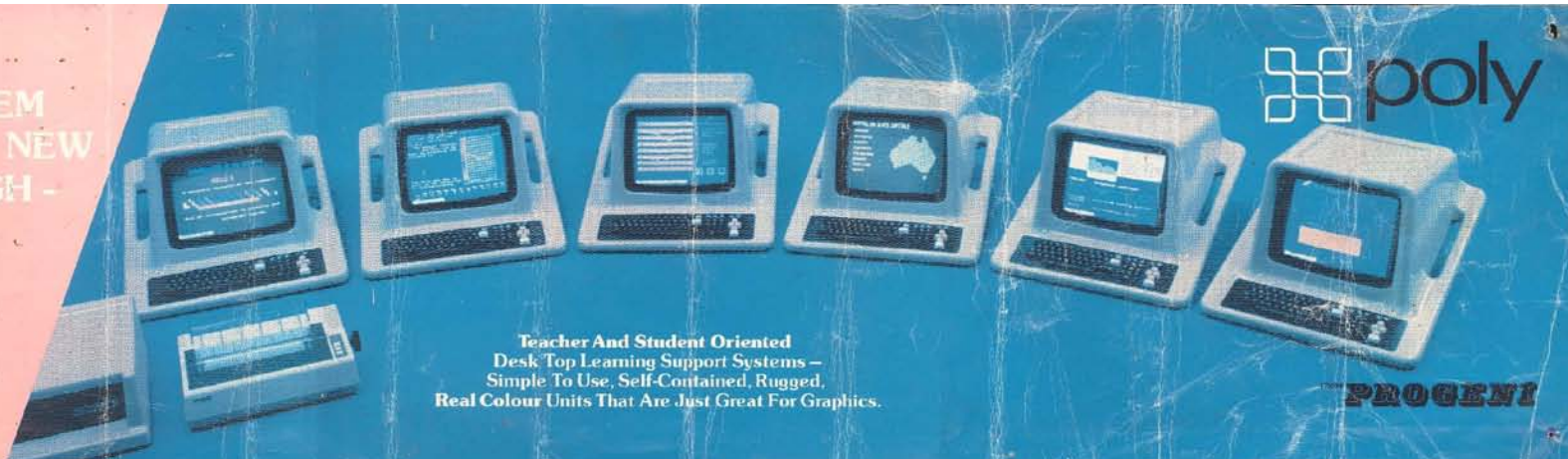 - BASIC, Pascal, Pilot, Logo, 6809, FORGE
- Games

- Educational Software

Poly 1,2,C

The End of the Poly

- The government reneges on $10M promise
  - Then spend it on The Springbok Tour

- Apple dump Apple][plus on NZ market
  - Apple educational price $1200 (retail $4812)
  - Poly-2 $2100, Monitor $1175, Proteus $2500
    - Total $3775 (plus extras)

- BNZ collapse
  - Progeni Ltd forced to service its debts

The End of the Poly

- Atari, Commodore, Sinclair, Acorn (BBC), and nearly Apple suffered the same end…
- Poly could not compete with cheap IBM PC clones (despite technical superiority)

http://en.wikipedia.org/wiki/File:Ibm_pc_5150.jpg

Preservation of ICT Heritage

- Note that we are part of an international industry.
- Excellent collections to west in Power Museum in Sydney and Computer History Museum in California, Bletchley Park in UK

- Collections in NZ
- Our own projects
- What can be done

NZ Collections

- Not a good time – we are too soon, most museums have little interest, but there are good private collections

- MOTAT has good items in store but not a specialty – they had an exhibition privately curated

- Ferrymead has good items not well stored

Otago settlers museum

- Project lead by Brian Cox
  - ex HOD CS University of Otago.

- The best maintained and stored collection in NZ
  - Temperature and humidity controlled
  - Has an Otago-only restriction of interest
    - Otherwise there's too much stuff

- Actively restoring tabulators, but also has digital hardware (inc. IBM 360, 8-bits, etc.)

Our Own Projects

- See role as preserving what we can until the museums become interested

- University of Auckland Computer History displays

- University of Otago Poly project

Auckland Displays

- Auckland CSD blessed with wide corridors and large lobbies

- Have been given many items over the years, mostly now on display, not all well-captioned

- Gradual making displays telling stories of interest to students:

- Public welcome, on-line also:

Computing History Displays
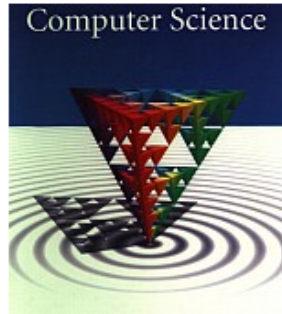
Welcome to our displays on the history of computing and computers.

You might like to have a look at the history time line in the entrance corridor down below or visit one of the lobbies to the right for displays containing more detail.

You can learn more about the displays here, where you can also see a list of the many topics that we cover.

Enjoy! If you are intrigued by what you find here and live close to Auckland, or are visiting the city, please feel free to drop in to the department and see the displays for yourself. We are located at the University on Princes Street and are always open during normal office hours and also in the evenings and on the weekends when classes are in session.

Otago Poly Project

- In contact with
  - Neil Scott, Perce Harpham, Alec Utting, and other PolyPeople
- Searching for Poly hardware, software and documentation, putting it all online
  - Acquired Poly 1, Poly 2, Proteus
  - Need Poly C, Polydrive, other hardware
    - There was a 5.25" stand-alone Poly!
    - There was a 3" Proteus!
- Many disks have become corrupt over time

Otago Poly Emulator

- Built a Poly emulator (for Windows)
  - Use a NEC APC to copy 8" disk images to PC
    - But also 5.25" and 3" disk images using AnaDisk!
  - Build an interactive runtime disassembler back ended onto the Poly Emulator[†]
- Disassembling the Poly ROMs, POLYSYS, and disk images to understand the hardware, networking, and disk sub-systems
  - Then use that to extend the emulator
- Recent finds include: Proteus CP/M and FLEX

[†]Sherlock, N., Trotman, A. (2009), Id - Dynamic Views on Static and Dynamic Disassembly Listings. In Proceedings of ADCS 2009

What can be done?

- Please contact us if you have or know anything