



7 JANUARY 2021

Starting Over

Liam Proven

A FOSS proposal
for a new type of OS
for a new type of computer



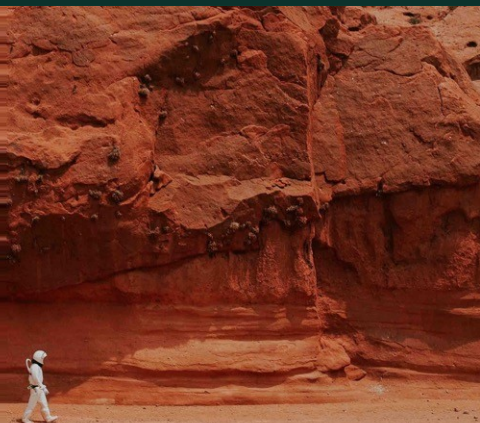
7 JANUARY 2021

Obligatory disclaimer: I'm using a SUSE template but this is *not* a SUSE talk!

I work for SUSE. It sponsors my attendance at FOSDEM, and I thank the company for that.

But I **am not speaking for SUSE**, on SUSE's behalf, or talking about company ideas, products, trademarks, intellectual property or anything at all to do with SUSE in any way.

I am just flying the flag for a fun place to work.



Quick recap

This talk is a loose sequel to my previous ones, so here's a quick refresher



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The Circuit Less Travelled

Forgotten and future wars and platforms

Liam Proven
The Circuit Less Travelled



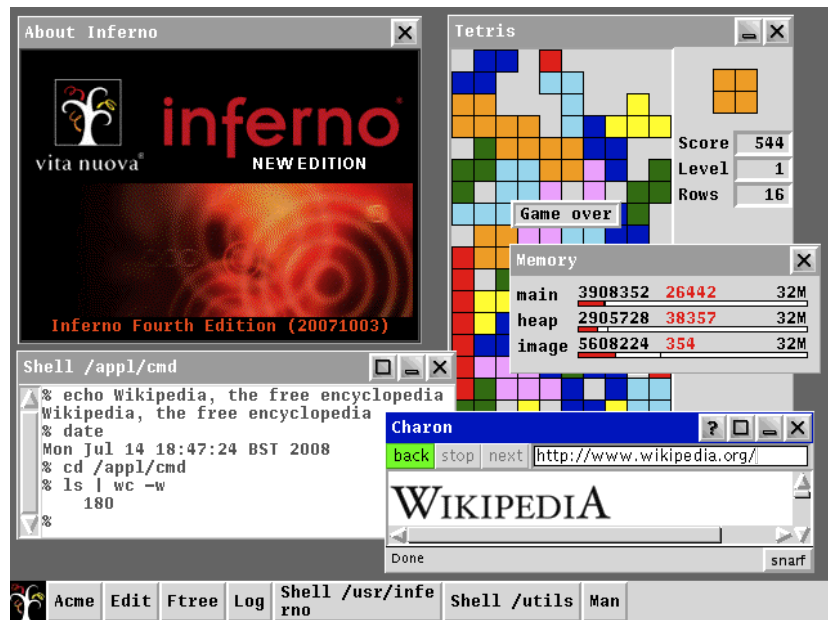
Generation Gaps

A heretical history of computing

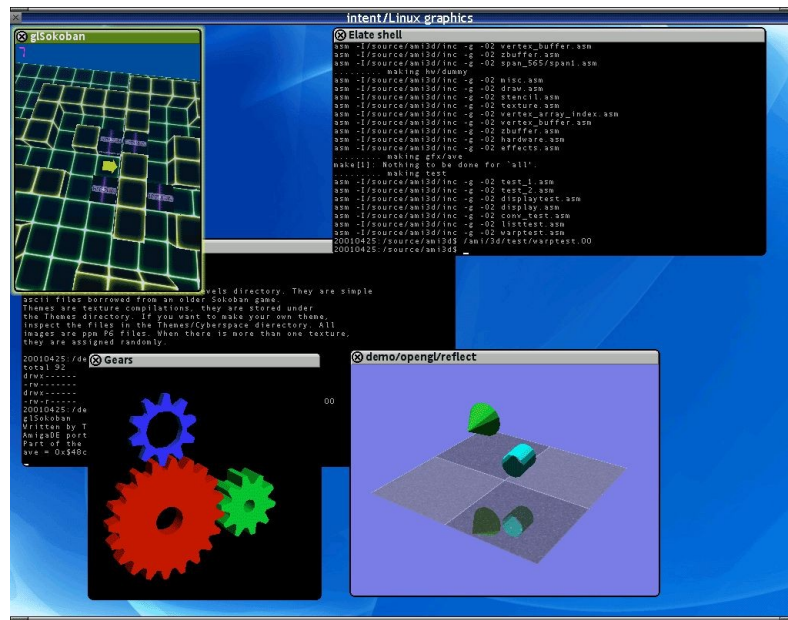
Liam Proven
Technical Writer, SUSE Linux Prague
lproven@suse.cz • <https://about.me/liamproven>
FOSDEM 2020

The Circuit Less Travelled

Inferno:
UNIX three-point-zero
Kind of like Plan 9, but usable



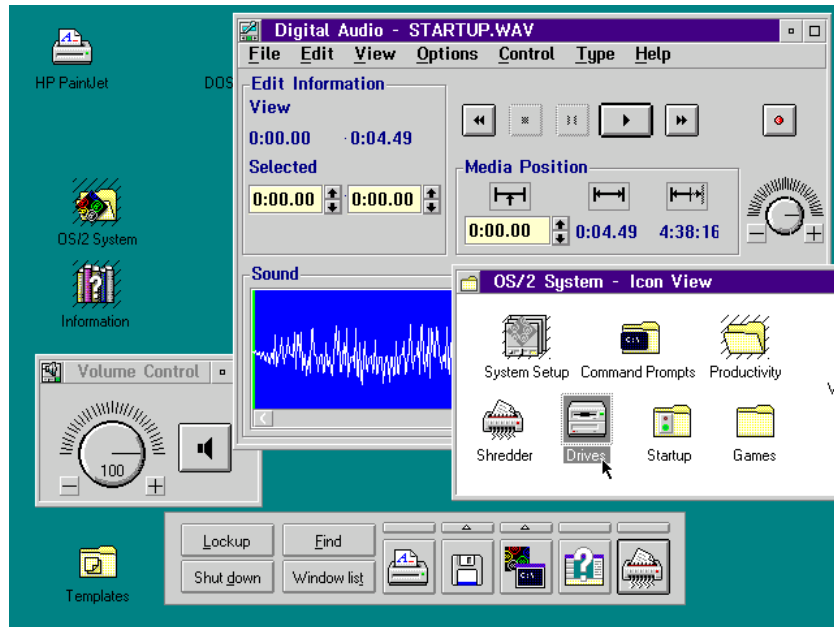
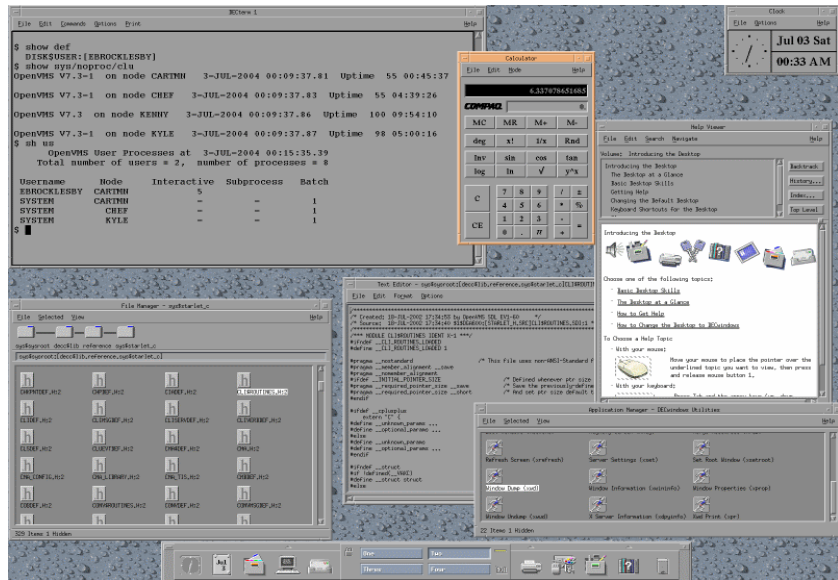
Tao Intent:
(AKA AmigaDE)
A future Amiga that never happened



The Circuit Less Travelled

DEC OpenVMS

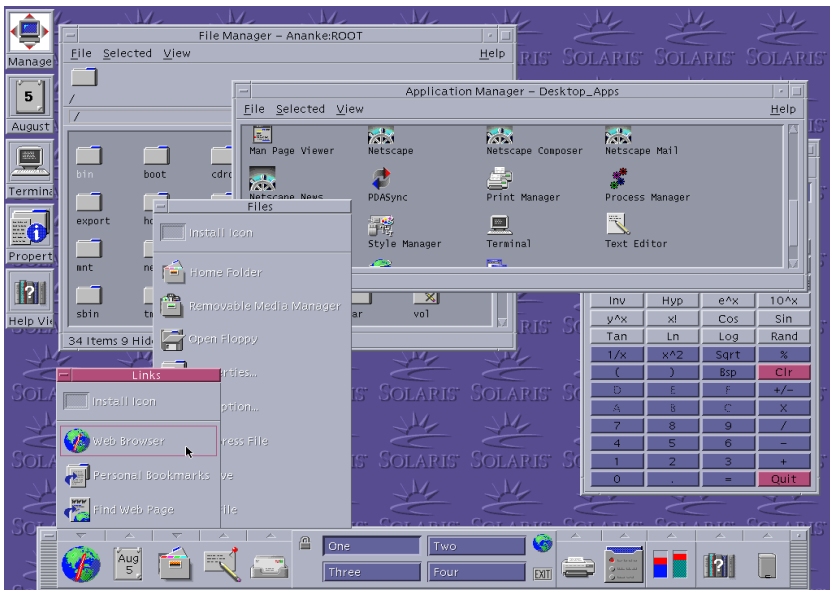
OS/2 (Warp 3, thanks to GUIdebook)



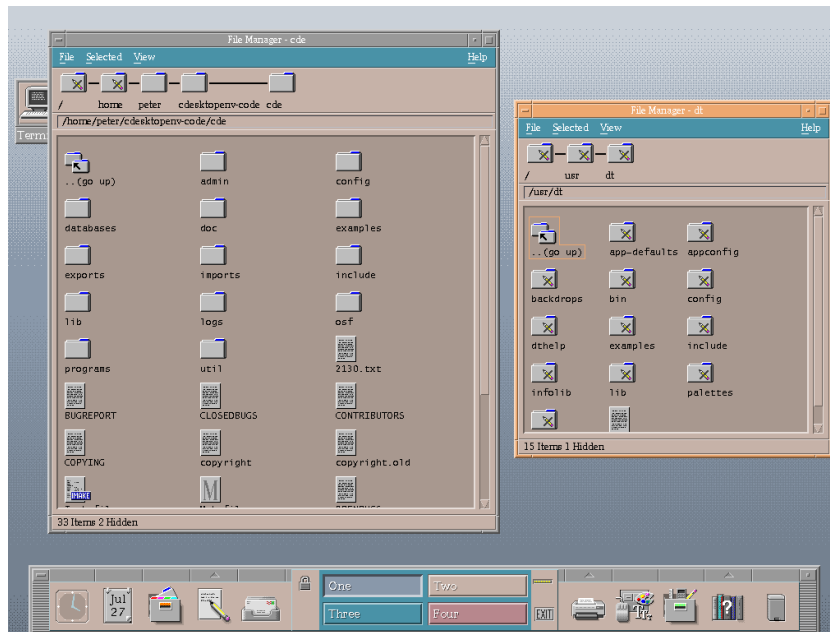
The two ancestors of Windows NT

The Circuit Less Travelled

CDE (Sun Solaris 9, thanks to GUIdebook)



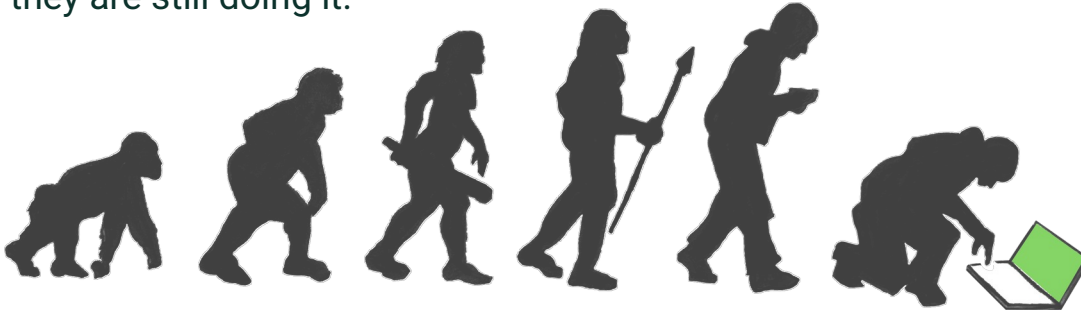
CDE (on Linux in 2012)



... but no no, honestly, NT and UNIX are *radically* different, really, they are!

Generation Gaps

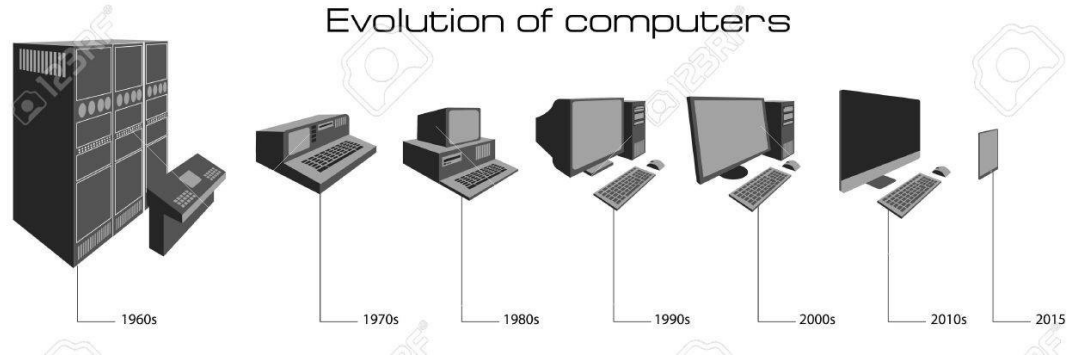
For clarity: *this is a joke*. Monkeys did not evolve into us. Monkeys evolved into better monkeys, and they are still doing it.



This one...

is broadly right

(Pic from 123RF)



Generation Gaps

Mainframe to mini to micro...



... to early home computer, to late one, to a PC with GUI



Psion EPOC

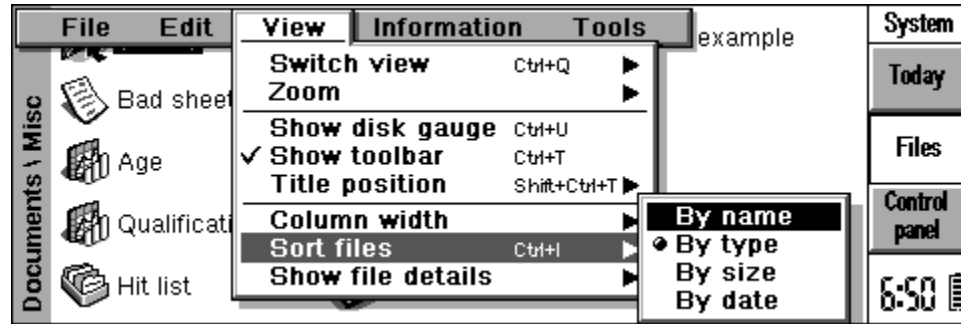
EPOC16 (Psion 3)...



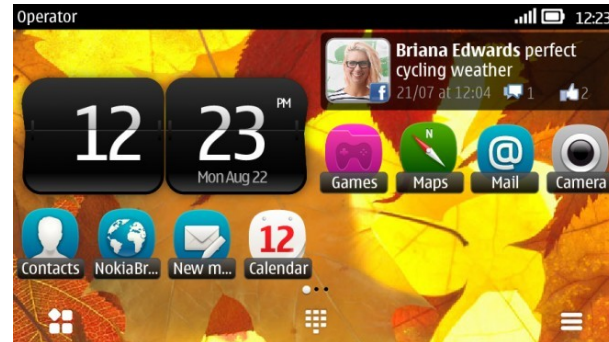
EPOC32 (Psion 5)...

and finally...

Symbian (Nokia)



(The Symbian source is still on Github.
Someone do a Raspberry Pi port?
Please?)





This is a brand new 8-bit computer.
In 2020.



(With any luck, mine will arrive in August.)



**YOU BLEW IT ALL UP YOU
MANIACS**

← Tweet



Liam Proven @lproven · May 21, 2019



Trying to answer that on Twitter makes me sympathise with Pierre de Fermat.

Software, I think, is like a dry forest. Unless you burn it all down every so often, it gets choked with undergrowth. We're 20-30 years late for a big fire. That means it's going to hurt. Badly.



5



1



David Cantrell
@DrHydeous



Replying to @lproven and @mfwiniberg

[gleefully starts throwing around fag butts and broken glass]

9:23 PM · May 21, 2019 · Twitter for iPhone

1 Like



← This is British English for
“cigarette ends”



A designer knows he has achieved perfection not when there is nothing left to add, but when there is nothing left to take away.

— *Antoine de Saint-Exupéry* —

AZ QUOTES

Rivals? Really? *These?* Yes.



Amiga 500
Introduced 1987 @ £499
Discontinued 1991



Amstrad ZX Spectrum +3
Introduced 1987 @ £249
Discontinued 1992

The best reason of all: Just For Fun

From: torvalds@klaava.Helsinki.FI (Linus Benedict Torvalds)
Newsgroups: comp.os.minix
Subject: What would you like to see most in minix?
Summary: small poll for my new operating system
Message-ID:
Date: 25 Aug 91 20:57:08 GMT
Organization: University of Helsinki

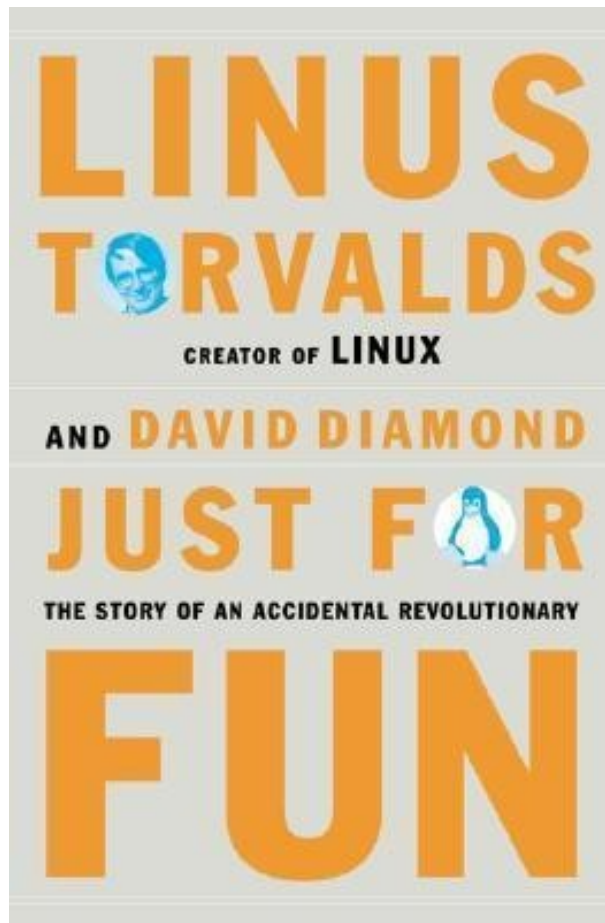
Hello everybody out there using minix -

I'm doing a (free) operating system (just a hobby, won't be big and professional like gnu) for 386(486) AT clones. This has been brewing since april, and is starting to get ready. I'd like any feedback on things people like/dislike in minix, as my OS resembles it somewhat (same physical layout of the file-system (due to practical reasons) among other things).

I've currently ported bash(1.08) and gcc(1.40), and things seem to work. This implies that I'll get something practical within a few months, and I'd like to know what features most people would want. Any suggestions are welcome, but I won't promise I'll implement them :-)

Linus (torvalds@kruuna.helsinki.fi)

PS. Yes - it's free of any minix code, and it has a multi-threaded fs. It is NOT protable (uses 386 task switching etc), and it probably never will support anything other than AT-harddisks, as that's all I have :-)

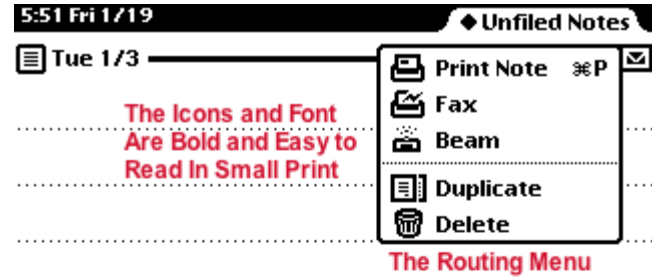
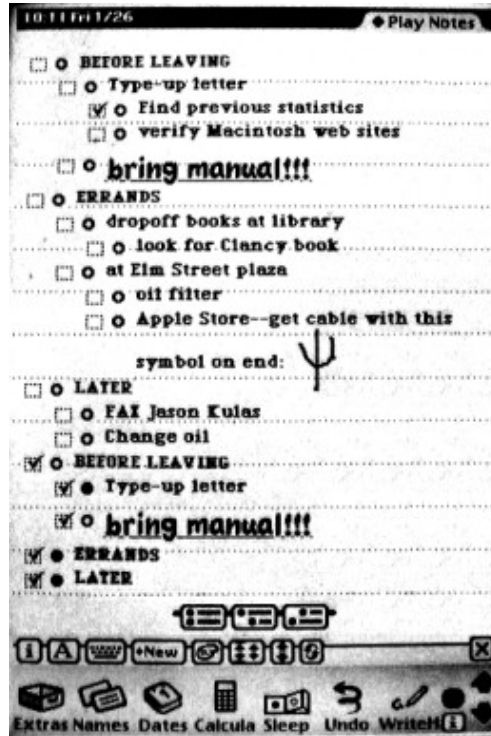


The Circuit Less Travelled

The Apple Newton

Email in your
pocket – in 1993

Less a computer,
more magical
“smart paper”
that understands
what you meant



I made a Clipping at
bottom right.



A Clipping

Look, Mo...



Palm

Launched: 1996

Discontinued: 2007

Total sales: 36 million

Software titles: 20,000

No filesystem.



Figures: <https://www.palmsource.com/products/>

SGI O₂

Bytefest,
Prague,
2019

(I was there.
I spent a
happy hour or so
playing with this
very machine.)

Source: www.bytefest.cz



The last Symbolics engineer

«

We took about 10 to 12 man-years to do the Ivory chip, and the only comparable chip that was contemporaneous to that was the MicroVAX chip over at DEC. I knew some people that worked on that, and their estimates were that it was 70 to 80 man-years to do the microVAX. That in a nutshell was the reason that the Lisp Machine was great.

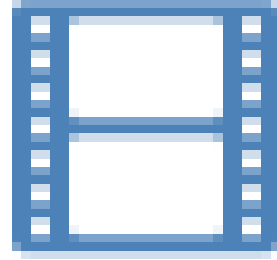
»

— Kalman Reti

Source: <http://www.loper-os.org/?p=932>

Presentation: <http://people.csail.mit.edu/reti/SymbolicsTalk28June2012.m4v>

What
Steve
Jobs
missed
when he
visited
Xerox
PARC



Source:
S. Jobs

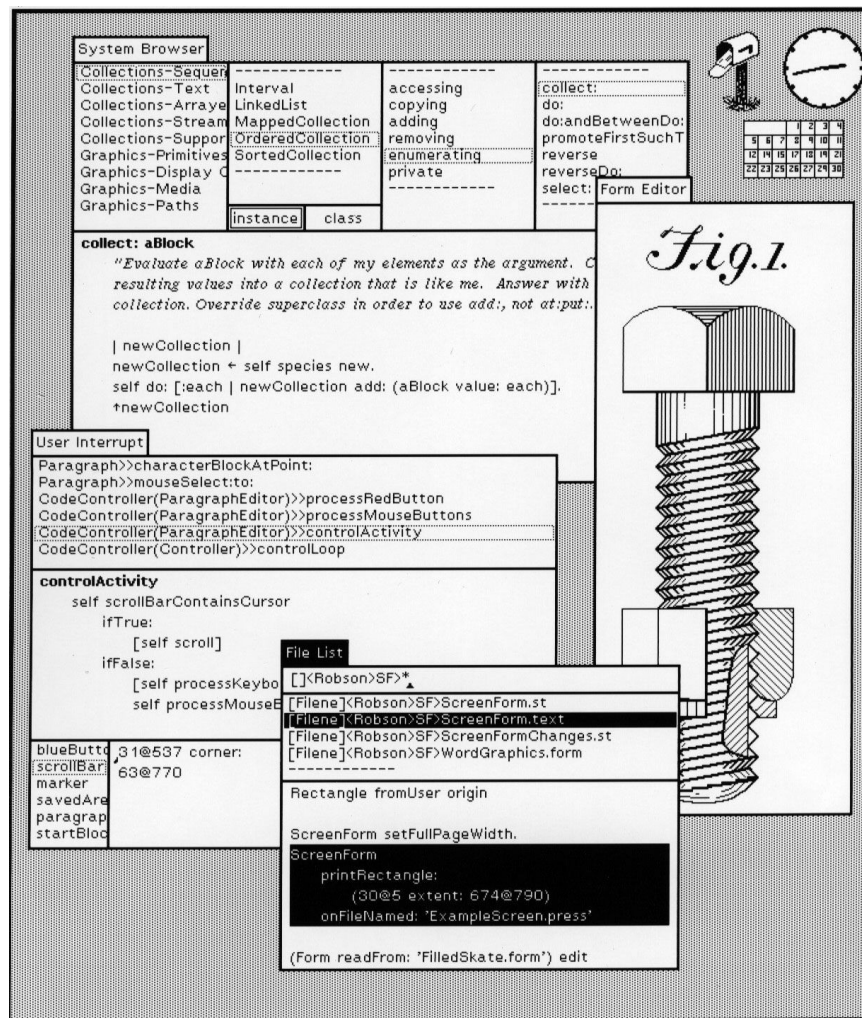
Smalltalk then...

Smalltalk-80, on the Xerox Alto.

This is what Jobs saw.

Note what *isn't* there:

- Title bars
- Maximize/minimize/close controls
- OK or Cancel or indeed any buttons

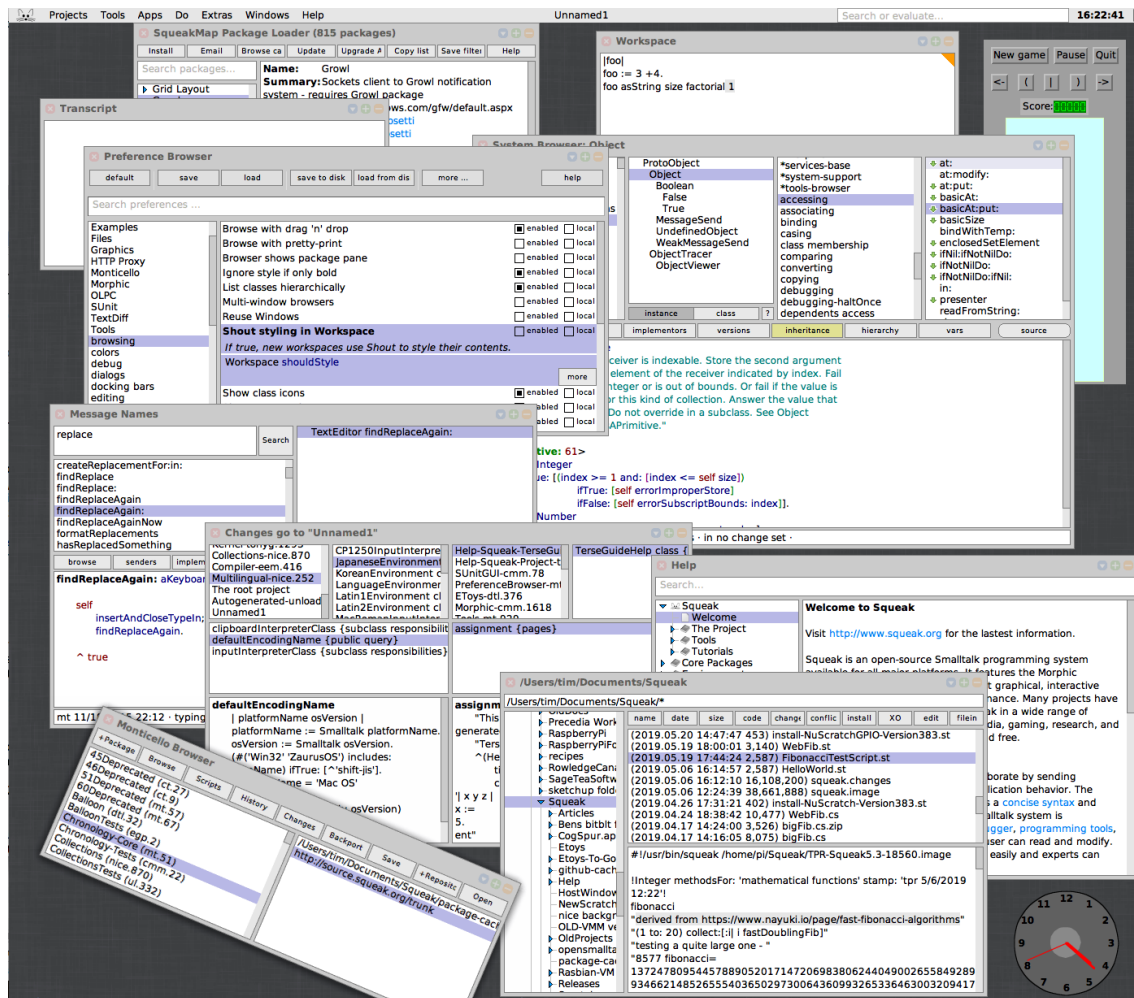


Smalltalk now...

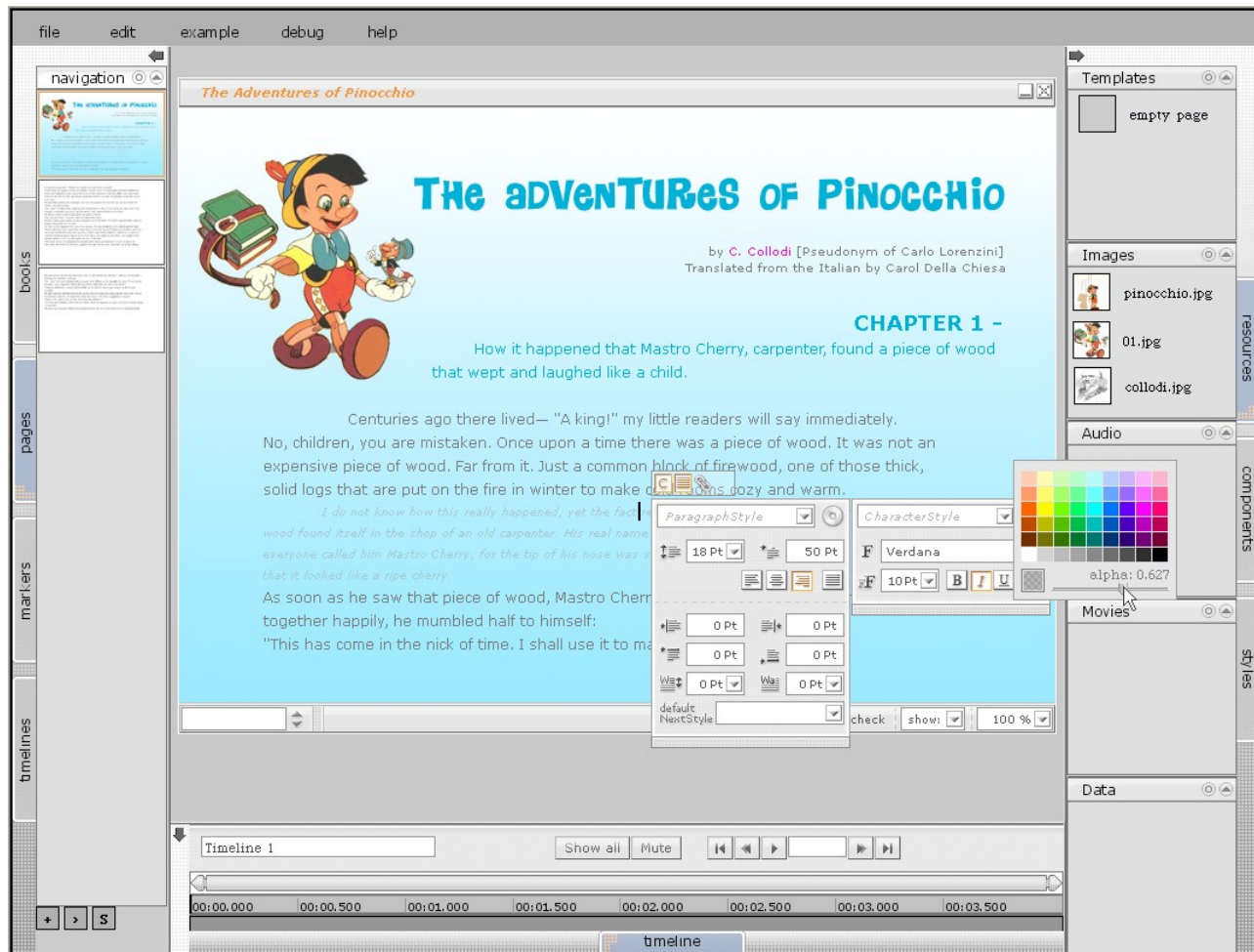
Squeak today.

It's grown somewhat.

This may be an educational tool, but it's serious stuff.



And it has
apps.



Andy Bower

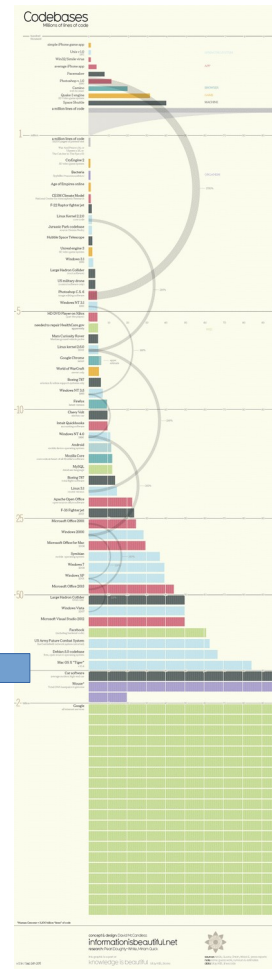
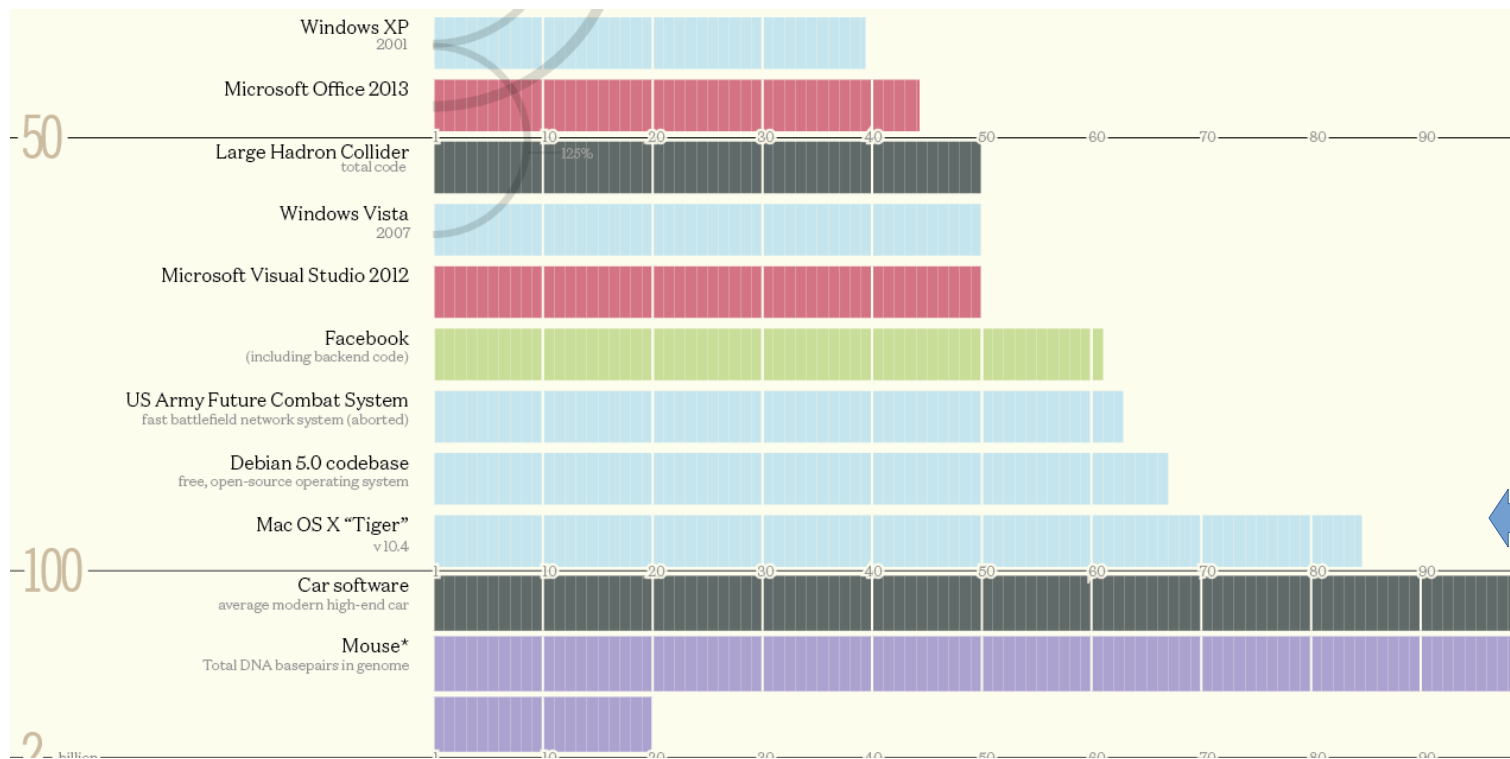
C++ programmer, co-founder of Dolphin Smalltalk

«

*Smalltalk is dangerous. It is a drug. My advice to you would be don't try it; it could ruin your life. Once you take the time to learn it (to **REALLY** learn it) you will see that there is nothing out there (yet) to touch it. Of course, like all drugs, how dangerous it is depends on your character. It may be that once you've got to this stage you'll find it difficult (if not impossible) to "go back" to other languages and, if you are forced to, you might become an embittered character constantly muttering ascerbic comments under you breath. Who knows, you may even have to quit the software industry altogether because nothing else lives up to your new expectations.*

»

Lines of Code



Source: Information is Beautiful, <https://informationisbeautiful.net/>

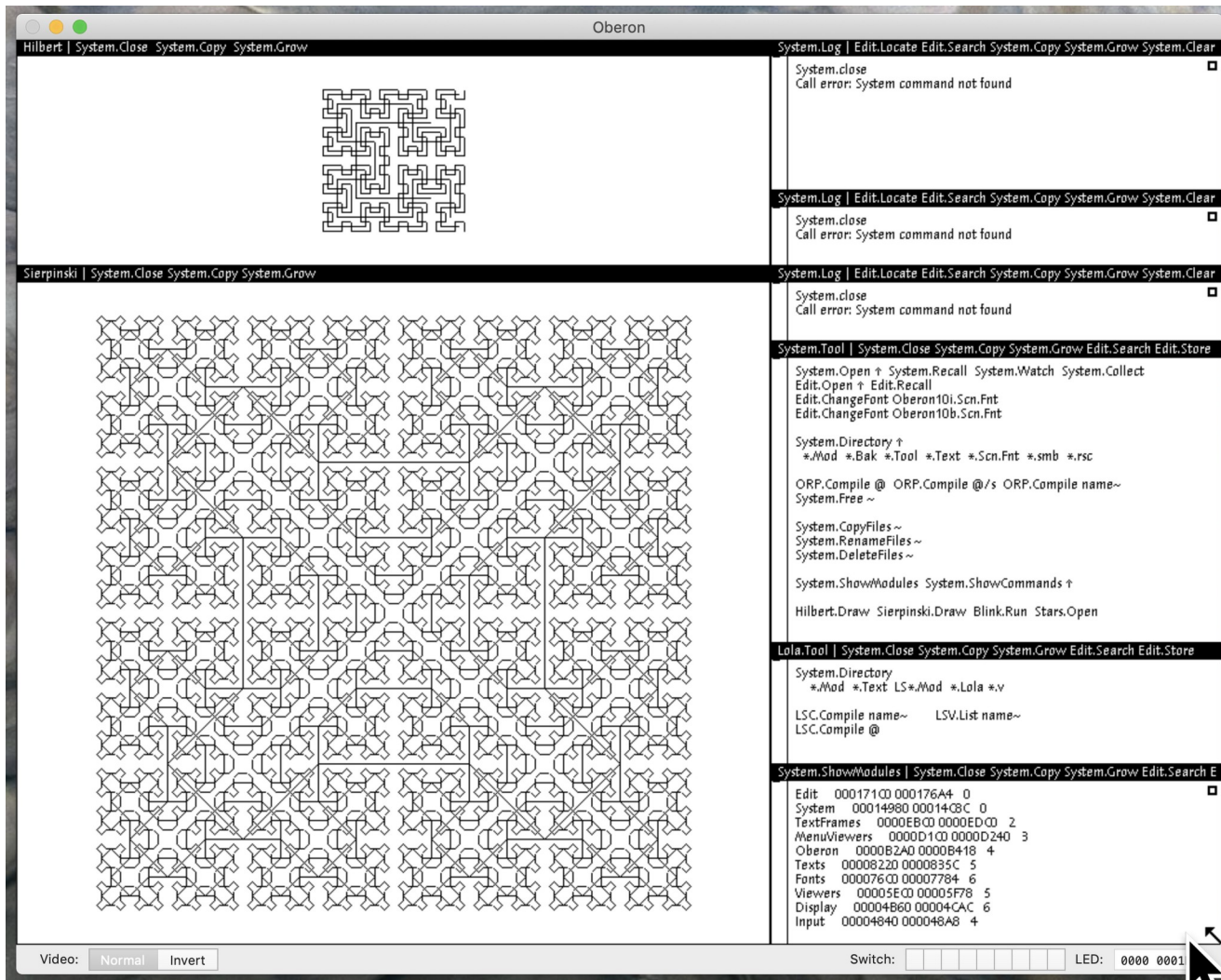
Oberon

Project Oberon
2013,
in Oberon-07

Running as
an app under
macOS
“Mojave”

Note the text-
based
windowing
interface.

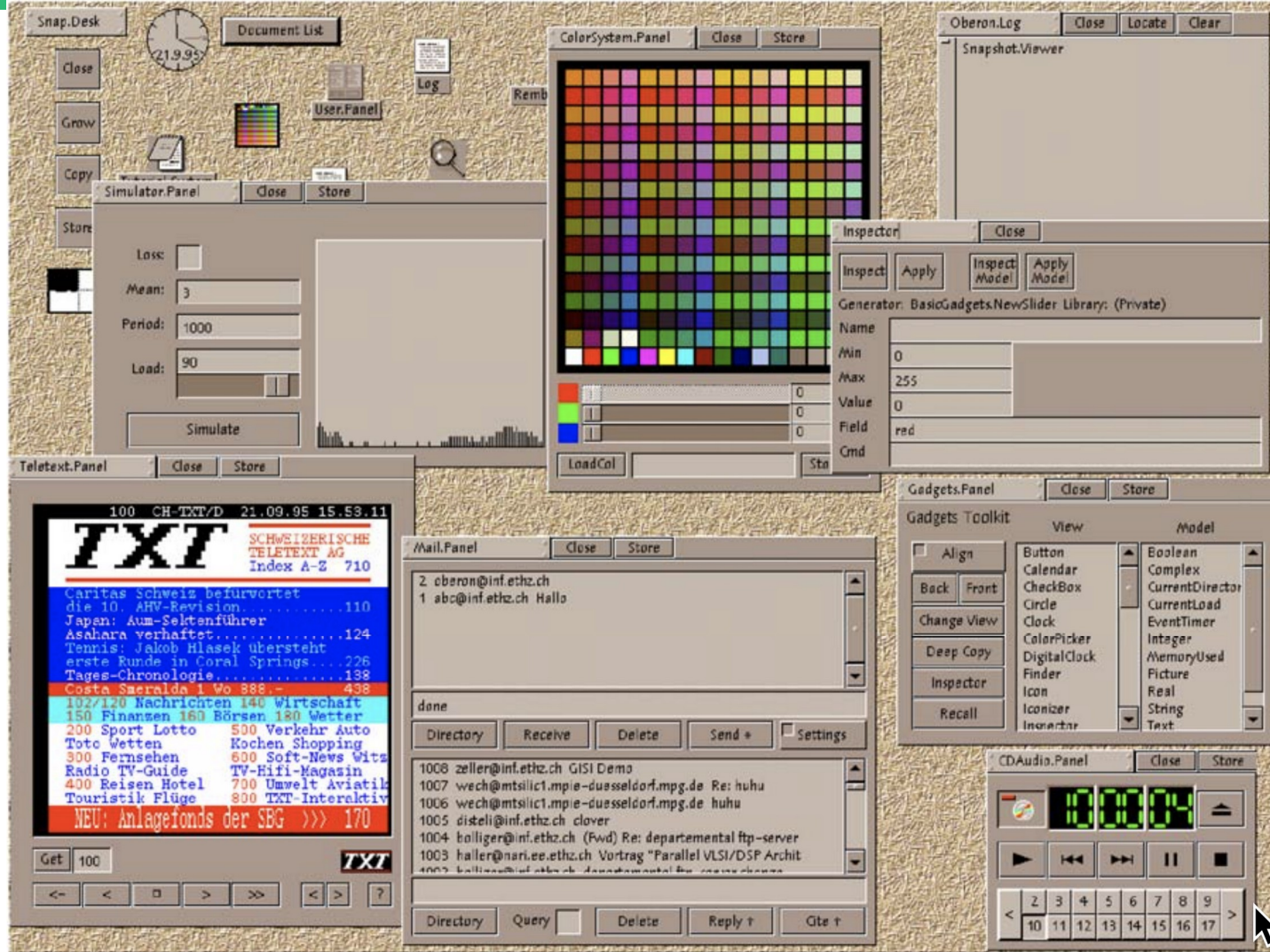
(Source:
my own iMac)



Oberon System 3

Note the more conventional GUI, called "Gadgets"

(Source:
"Project Oberon -
the design of an operating
system and compiler"
N. Wirth, J. Gutknecht
Published 1992)

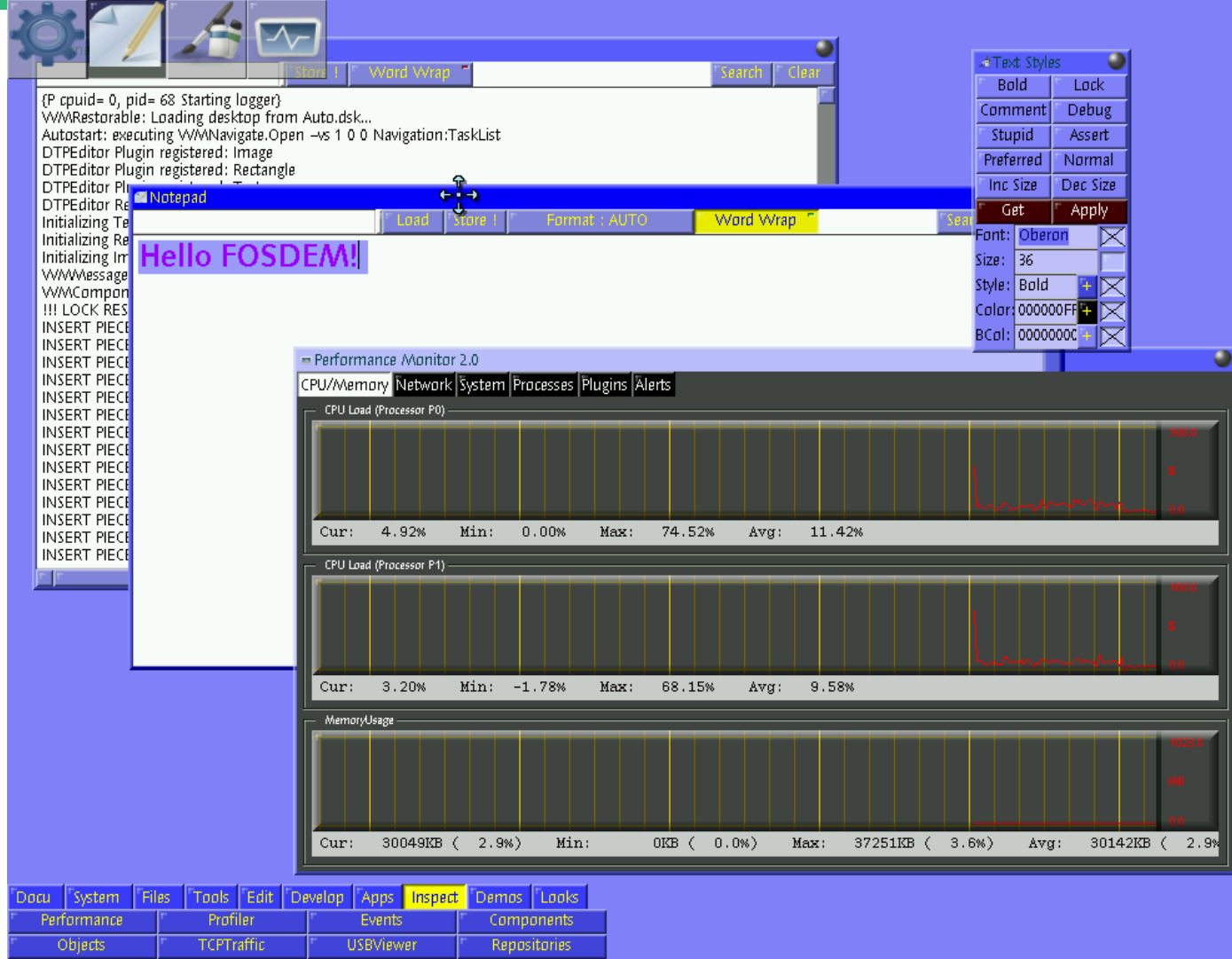


A2 OS

This is the graphical zooming UI, "Bluebottle"

Note that 2 CPU cores are in use

(Source: VirtualBox VM on author's own machine)



Two massively-influential workstations

Xerox Alto with Smalltalk

Released 1973

Price: \$32,000 (in 1979)



Source: <https://techn0mad.wordpress.com/tag/smalltalk/>

Symbolics 3620 Lisp Machine

Released 1983

Price: \$49,900



Source: <http://www.computinghistory.org.uk/det/22982/Symbolics-3620/> 30

Newspeak

Running under
Squeak

Available for Windows,
macOS and Linux

Source:
<https://newspeaklanguage.org/>

Stack Trace: MessageNotUnderstood: Blowup>>missing:with: - Newspeak

Call stack

doesNotUnderstand: #missing:with: in Blowup (Object) message not understood

over into into block ^nil ^MessageNot...etc... Evaluate Continue Terminate

```
protected doesNotUnderstand: message = (  
  | selector exception resumptionValue |  
  selector: message selector.  
  0 == message arguments size ifTrue: [(selector startsWith: 'is')  
  ifTrue:  
    ((* 2 = LdFalse - LdSelf, i.e. this is a ^false method *)  
    | method = CompiledMethod toReturnConstant: 2 trailerBytes:  
    CompiledMethodTrailer empty. |  
    method selector: selector.  
    method methodClass: Object.  
    (* :bug: This should be added to the receiver class to avoid  
    making the behavior of proxies dependent whether an isFoo message  
    has already been sent to another class. *)  
    Object  
      methodDict at: selector put: method.  
    selector flushCache.  
    ^false]].  
  exception: MessageNotUnderstood new  
  message: message;  
  receiver: self.  
  resumptionValue: exception signal.  
  ^ exception reachedDefaultHandler  
  ifTrue: [ message sentTo: self ]  
  ifFalse: [ resumptionValue ].  
)
```

self Blowup#2227610
message missing: true with: Blowup#222761
selector #missing:with:
exception MessageNotUnderstood: Blowup>
resumptionValue nil

Expression Stack
2 MessageNotUnderstood: Blowup>>miss
1 nil
--- end of stack ---

Evaluation Results [clear]

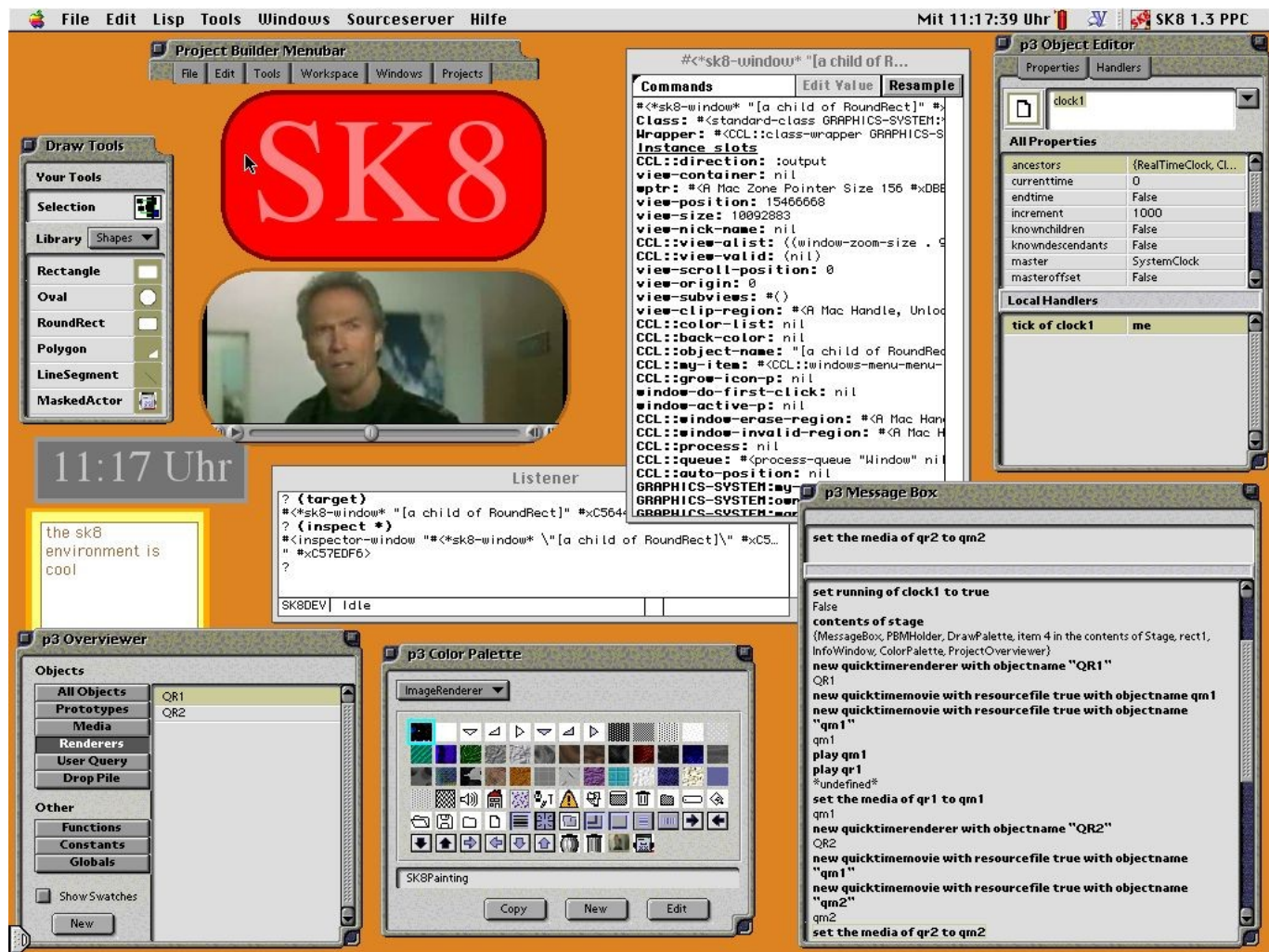
provokeBug: in Blowup
DoltWith: in Workspace_1
object:executeMethod:with:ifFail: in VMMirror

as yet unclassified
nil
Object

Apple Dylan with SK8

On classic
MacOS,
on a
PowerMac

Source:
lemonodor.com/archives/2002/02/lisp_porn.html



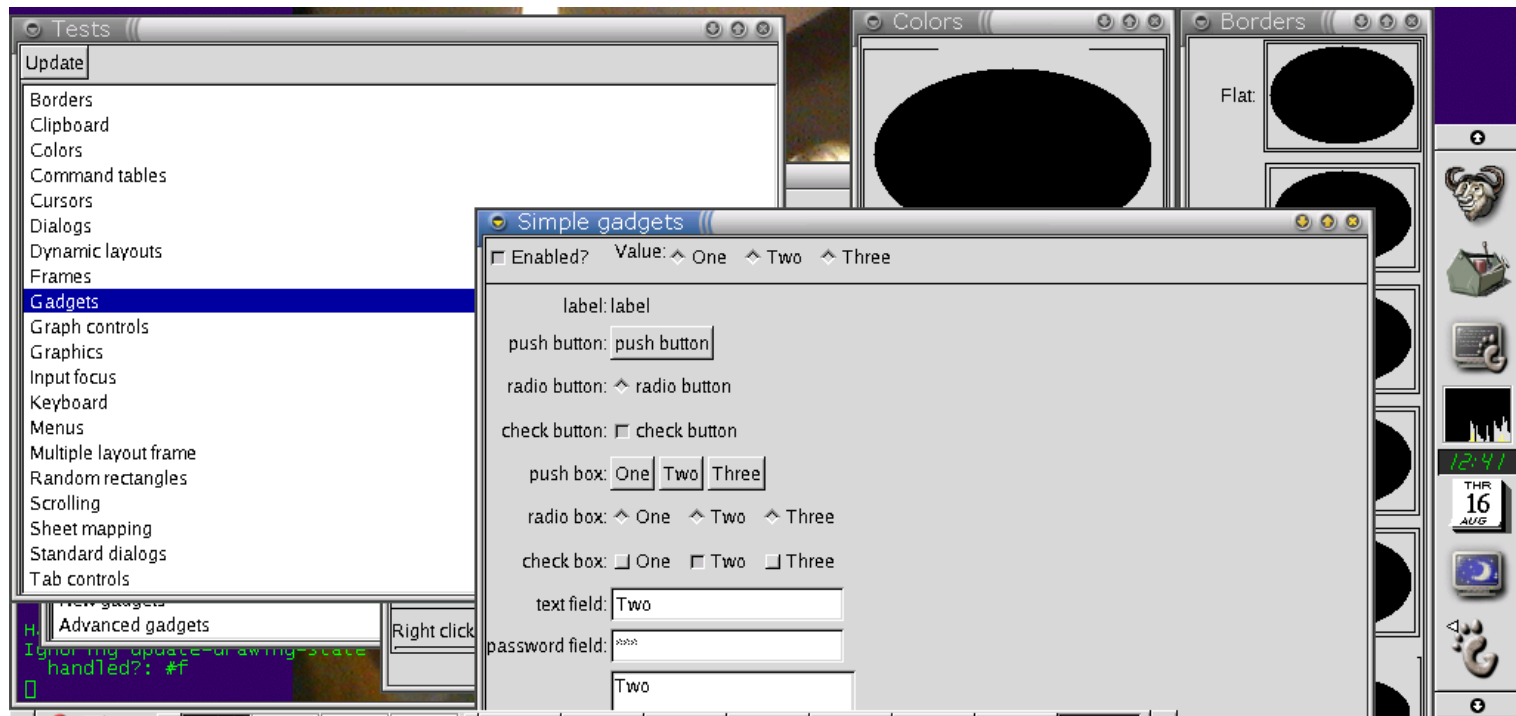
OpenDylan and Gwydion Dylan

More info:

opendylan.org

Latest release:
2020.1
(2020-10-10)

gwydiondylan.org



Steve Yegge

<http://steve-yegge.blogspot.com/>

«

So... the best way to compare programming languages is by analogy to cars.

Lisp is a whole family of languages, and can be broken down approximately as follows:

- Scheme is an exotic sports car. Fast. Manual transmission. No radio.
- Emacs Lisp is a 1984 Subaru GL 4WD: “the car that's always in front of you.”
- Common Lisp is Howl's Moving Castle.

»

Source: <http://steve-yegge.blogspot.com/2008/11/ejacs-javascript-interpreter-for-emacs.html>

Links, sources and inspiration

(A very incomplete list)

On the importance of Lisp Machines:

On Kalman Reti:

A previous effort at a new kind of OS:

About Apple Dylan:

Apple Dylan downloads:

Project Oberon:

Linz Oberon:

Oberon documentation:

More Oberon and A2 links:

Squeak:

Newspeak:

Inferno:

Modern forks of Plan 9:

Jehanne OS

Harvey OS

<http://www.loper-os.org/?p=8>

<http://www.loper-os.org/?p=932>

<http://tunes.org/overview.html>

<https://opendylan.org/history/apple-dylan/>

<https://www.macintoshrepository.org/1358-apple-dylan-tr>

<http://www.projectoberon.com/>

<https://ssw.jku.at/Research/Projects/Oberon.html>

<https://en.wikibooks.org/wiki/Oberon>

<https://liam-on-linux.livejournal.com/46523.html>

<https://squeak.org/>

<https://newspeaklanguage.org/>

<http://www.vitanuova.com/inferno/>

<http://jehanne.io/>

<https://harvey-os.org/>



Thank you

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