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
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)

... 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?)
AINT NOBODY

GOT TIME FOR THAT
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
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.

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

← 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-Exupery —
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@kluava.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 2physical 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 portable (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
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
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 your 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)

Symbolics 3620 Lisp Machine
Released 1983
Price: $49,900

Source: https://techn0mad.wordpress.com/tag/smalltalk/
Source: http://www.computinghistory.org.uk/det/22982/Symbolics-3620/
Newspeak

Running under Squeak

Available for Windows, macOS and Linux

Source: https://newspeaklanguage.org/
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
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.

On the importance of Lisp Machines: http://www.loper-os.org/?p=8
On Kalman Reti: http://www.loper-os.org/?p=932
A previous effort at a new kind of OS: http://tunes.org/overview.html
About Apple Dylan: https://opendylan.org/history/apple-dylan/
Apple Dylan downloads: https://www.macintoshrepository.org/1358-apple-dylan-tr
Project Oberon: http://www.projectoberon.com/
Linz Oberon: https://ssw.jku.at/Research/Projects/Oberon.html
Oberon documentation: https://en.wikibooks.org/wiki/Oberon
More Oberon and A2 links: https://liam-on-linux.livejournal.com/46523.html
Squeak: https://squeak.org/
Newspeak: https://newspeaklanguage.org/
Inferno: https://www.vitanuova.com/inferno/
Modern forks of Plan 9:
  Jehovah OS http://jehanne.io/
  Harvey OS https://harvey-os.org/
Thank you

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