
NHS
an OS
for the NHS

@marcus_baw

GP & former Anaesthetist

Clinical informatician / ‘General Hacktitioner’

NHS.UK Alpha, RCGP HIG, Endeavour Health, Apperta Foundation, Eyedraw/OpenEyes, Professional Records Standards Body, NHS Healthy Child Programme, NHS WiFi Programme, NHS Hack Day, CCIO Network, UKHealthCamp, Clinical Software Usability Survey 2015-2016...

‘Open Source is the Only Way For Medicine’

NHoS project:

volunteer effort

9 months

'unofficial' from NHS POV

Apperta backing £40k since April

What is NHoS?

NHoS takes a linux desktop and **optimises it for the NHS**

unofficial: not an NHS Digital initiative (Yet)

removes packages the NHS doesn't need

adds packages the NHS needs

adds familiarity by configuring look & feel, branding etc

develops custom elements

provides services around NHoS - customisations, Disaster-recovery Live USB version, custom development.

What is Linux?

A free, open source UNIX based operating system

Released 1991 by Linus Torvalds, Finnish Computer Science student

Now running on 96.6% of the world’s top 1 million websites

It is inside all Android devices and Chromebook laptops

It is used by web giants like Amazon, Facebook and Google

Apple, Oracle, and IBM all use free UNIX variants

What's wrong with just using Windows?

it's very costly

£700 to license a new machine

1300 machines / organisation

5 year lifetime of applications

>500 'major' sized organisations in NHS (CCG + Acutes + MH)

£455m

source: best guessing, CIO interviews, and http://www.nhsconfed.org/resources/key-statistics-on-the-nhs

E455m

there is no upgrade path for some NHS orgs

legacy clinical apps with pre-Win10 dependencies

no resources to migrate off those legacy clinical apps

increasing security risk from these older dependencies

There Is No Plan

Windows 7 End Of Support: January 14th 2020

New hardware will not work with older Windows versions

Old hardware may not perform well with Win 10

Clinical apps may not work with Win10 or Edge

1) You have to migrate to Win10 before 2020

2) You have to replace all legacy clinical apps before 2020, to do 1)

3) You need to upgrade all your hardware in order to do 2)

You can’t afford to do 1), 2), and 3) at the same time (cash/staff/training)

You’re stuck.

it leaks patient data?

Windows 10 sends data to Microsoft in over 30 ways (incl raw keystrokes)

This can be over-ridden in your org - but it is extra work, and not easy

Third party / home PCs accessing NHSMail, VPNing into trust systems are beyond organisational controls, and may leak data, so as we develop wider data sharing, it will be impossible to prevent keystrokes being sent to Redmond, WA, USA.

We may not be able to stop privacy-critical PID keystroke data being sent to Microsoft via Windows 10 PCs

We need to think hard about whether Windows 10 is fit for the NHS.

80%

~80% of NHS desktops are for backoffice/admin

(discuss)

Libre Office suite

NHSmail2 Email

Modern browsers Firefox & Chromium/Chrome

Windows ‘shared drive’ (eek)

Network printers

Scanner app / drivers

Active Directory Support

demonstrating NHSmail, browser, office apps for the 80%

20%

20% of NHS desktops are used for direct clinical work

PAS (Patient Administration Systems)

EPR (Electronic Patient Record)

GP Clinical Systems

Clinical portals

NHS National Services on Spine:

Summary Care Record

e-Referral Service

Patient Demographic Services

Often heavily coupled to Windows ecosystem

More difficult to **Linuxify**

Hard dependencies on:

Internet Explorer

Microsoft Word

Microsoft OneNote even!

seamless clinical applications demo: TPP SystmOne

No we did not do WannaCry ;-)

The worldwide cyberattack on 12th May 2017, which hit NHS badly

Was well timed for us in terms of publicity

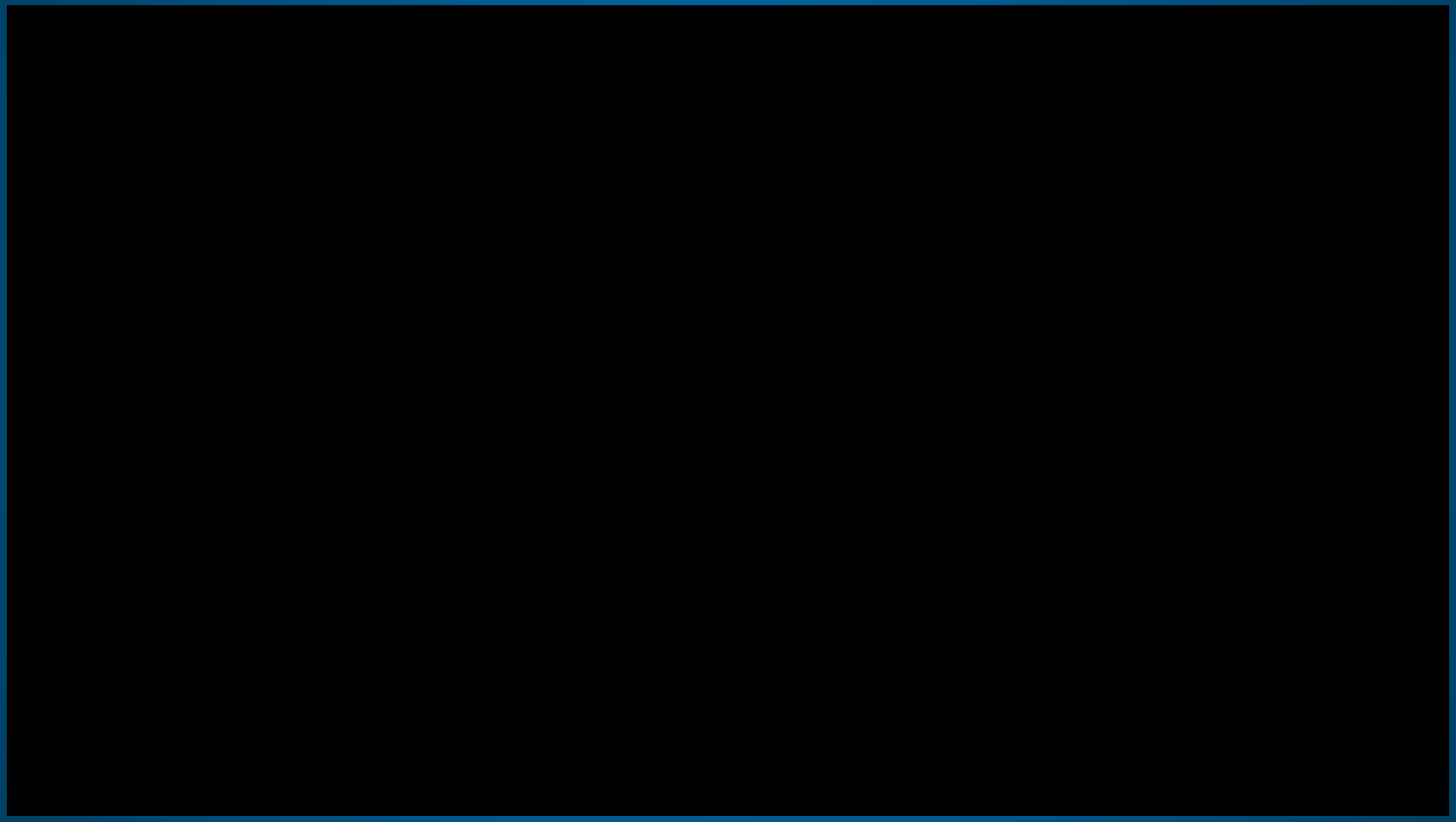
We didn’t do it, honest guv BUT

NHoS (as with all Linux) would **not** have been vulnerable

NHoS in even low-volume use could have provided **herd immunity**

Linux is not proof against all malware, but it's inherently more secure by design

installing NHoS



NHoS Governance

Open Source from the first commit

Open governance under Apperta Foundation

NHoS sub-committee of Apperta

Non-profit organisation (CIC)

Community can get involved and help steer

What are the team working on right now

Native Linux Identity Agent (for NHS Spine Smart cards)

Automated build chain tooling so we can programmatically make changes to image definition files and have the ISOs build and test automatically.

Exploration of the ‘NHoS for Disaster Recovery’ use-case

Performance testing of LiveUSB version on fast USBdrives/USB SSD

getting involved

download the ISO, install and play!

read more here: nhos.openhealthhub.org

tell people about NHoS

Follow us on Twitter @_nhos_