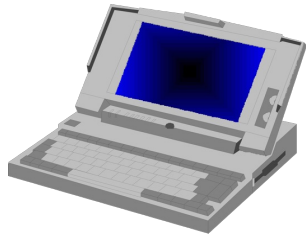




The IETF World of
Standardisation
Jon Crowcroft,
Transferable Skills,
2023
Computer Lab,
Cambridge University



The “I*” Organisations

- ISOC – Internet Society
<http://www.rfceditor.org/overview.html>
- IAB – Internet Architecture Board
- IESG – Internet Engineering Steering Group
- IETF – Internet Engineering Task Force
- IRTF – Internet Research Task Force
- IANA – Internet Assigned Numbers Authority
- RFC Editor
- ICANN – Internet Corporation for assigned names and numbers

The Standards Docs

- RFC != Standard
- Start life as idea
- Go to ietf working group
- If no group, go to Area Dirs (IESG) and ask for one. Requires a charter
- Document idea with I-d – can be procedure, protocol, practice or implementation hint
- WG last call, IESG last call
- Can last between 1 and 21 years!
 - C.f. my own experience ipng->ipv6
- <http://www.rfc-editor.org/overview.html>

In Practice

- Important topics (e.g. MPLS, VOIP, Signaling, IP on Bluetooth/GPRS/3G) require a lot more effort...
- Modest ideas can still proceed rapidly
- Inertia and workload take their toll.
- Industry or Fora pressure still frowned on...
- ...but happens (e.g. Cisco mpls, ETSI megaco 😊)

Does it work better than?

- Other groups
 - IEEE - do ethernet/wifi
 - 5Gpp – do cellular phone stuff
 - W3C – do web
- National & International Standards
 - BSI - <http://bsol.bsigroup.com/>
 - ISO, ITU
- Safety (Dyn IoT DDoS needs CE)?

Other Standards Domains

- Programming Languages
 - C++, Javascript etc – for a
- Platforms
 - Xen.org – cloud, mirage
 - Apache (spark, hadoop)
 - Mozilla
- Can incubate or even fund...

Question for you

- » what do you think a standards organisation for AI could&should look like?

Governments and IETF

- Don't mix well
- C.f. raven/intercept/calea/IPB
- Also recent “call” logging
- Also failure to understand global nature (despite governments claims to be all for global markets 😊)

Operational Internet

- See NANOG
- See RIPE, etc
- See weak anarchy, but strong tendency towards social good – e.g. multiple roots for DNS frowned on, non congestion avoiding TCP frowned on etc etc etc
- Layer 8 Politics

Who does standards work?

- Industry “goers” v. “doers”
- Government agencies
- Researchers (impact)
- Policy Wonks.....

What's in it for participant

- Impact
- Understand broader context
- RL v. Academic
- But beware
 - *Infinite* sink of time/energy/patience

Tussles in Standards Space

- » cellular standards stakeholders
 - » network equipment
 - » spectrum
 - » providers
 - » handset vendors & OS vendors
 - » app stores
 - » 3rd party (advert)
 - » geo trackers
- » add yours here!

Hot off the Press

- » Secure Message Platforms
- » Interoperation
 - due to EU Digital Services & Market Acts
 - Candidate – from Cambridge:
 - Matrix.org
 - Decentralized!
 - Open Source
- » add yours here!

AI standards

- » Should we even do comms research
 - And spin out into standards?
 - Great keynote by Henning Schulzrinne from Columbia/Sigcomm:

https://www.youtube.com/watch?v=5lvXIqI_mQ4

- » But same approaches for standards could apply well in other domains, e.g.
 - AI, QC, Security,
- » add yours here!

Behavioural Turing Test

- » There are evolving standards for telling if someone on the Internet is human or bot
- » CAPCHAs etc
- » Nowadays, we have to worry about
 - LLMs and Stable diffusion
 - Making pretty convincing deep fakes
- » But for live/online, we can add
 - Behavioural live checks
 - Like this that I am doing to you now 😊

Summary

- Internet standards a transparent process
- Internet operations are largely a free market
- Cost of entry to both standards and market are low
- Model adopted by others (E.g. Cloud)
- Hard work
- AI standards answer:- transparency!