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!