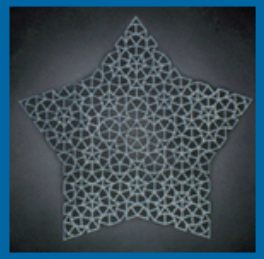
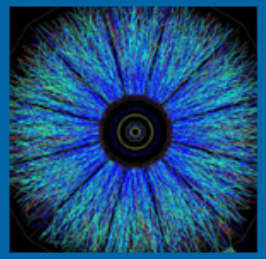
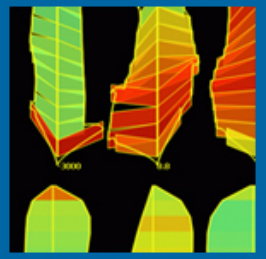
Swansea University
Prifysgol Abertawe

CS-130
Interlude: Governance of The Internet

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Learning goals

Going forward we still want to look at two more major security issues but before we can do that, we need to understand the legal structure and the protocols behind the Internet so the next hour is something of a detour as we start to ask…..

Where did the Internet come from?

Who decides who owns a given web domain?

Who are the major stakeholders when it comes to decision making about how the online world works?

What do you understand by “Governance of The Internet”?

What is Governance?

Amazon.co.uk and Amazon.com – both exist and point to different servers but who decides that?

Can the US President order the shutdown of the Internet?

How do we solve the identity issue when it comes to Public Key ownership?

A Brief History of The Internet

1960s

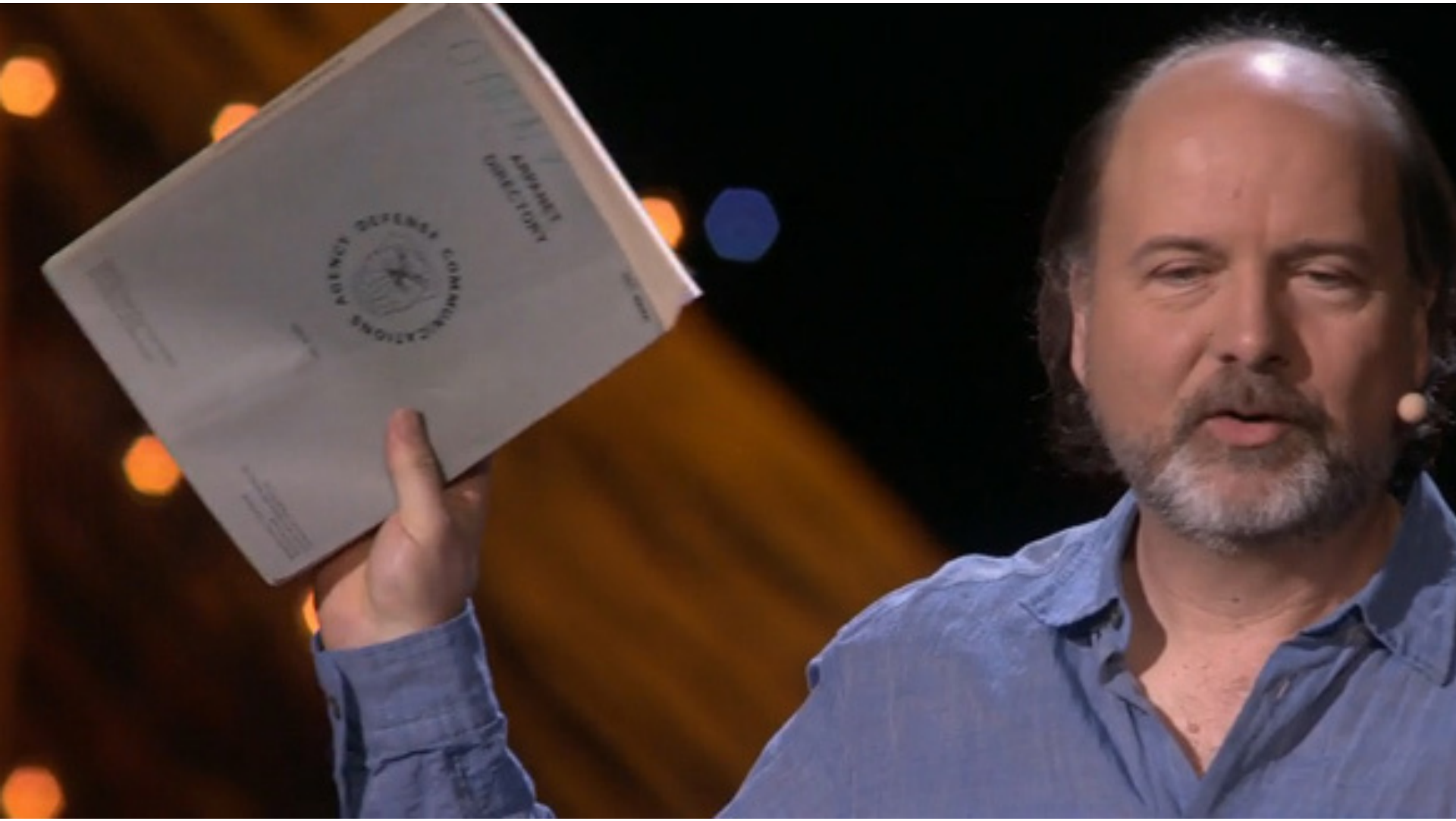
ARPANET – Request For Comments (RFCs) – Steve Cocker, Vint Cerf, Jon Postel (he's quite important)

1973 – 1981

Many different transmission protocols in operation on different networks but one eventual winner: **Transmission Control Protocol / Internet Protocol (TCP/IP)**

1982

Twenty five networks joined using TCP/IP, Jon Postel personally responsibility for assigning new address blocks and updating ***hosts.txt***


DEFENSE COMMUNICATIONS AGENCY

How does the Internet work now?

How do we turn http://www.google.com into something that we can find through our web browser

Internet Protocol (IP) addresses http://www.google.co.uk

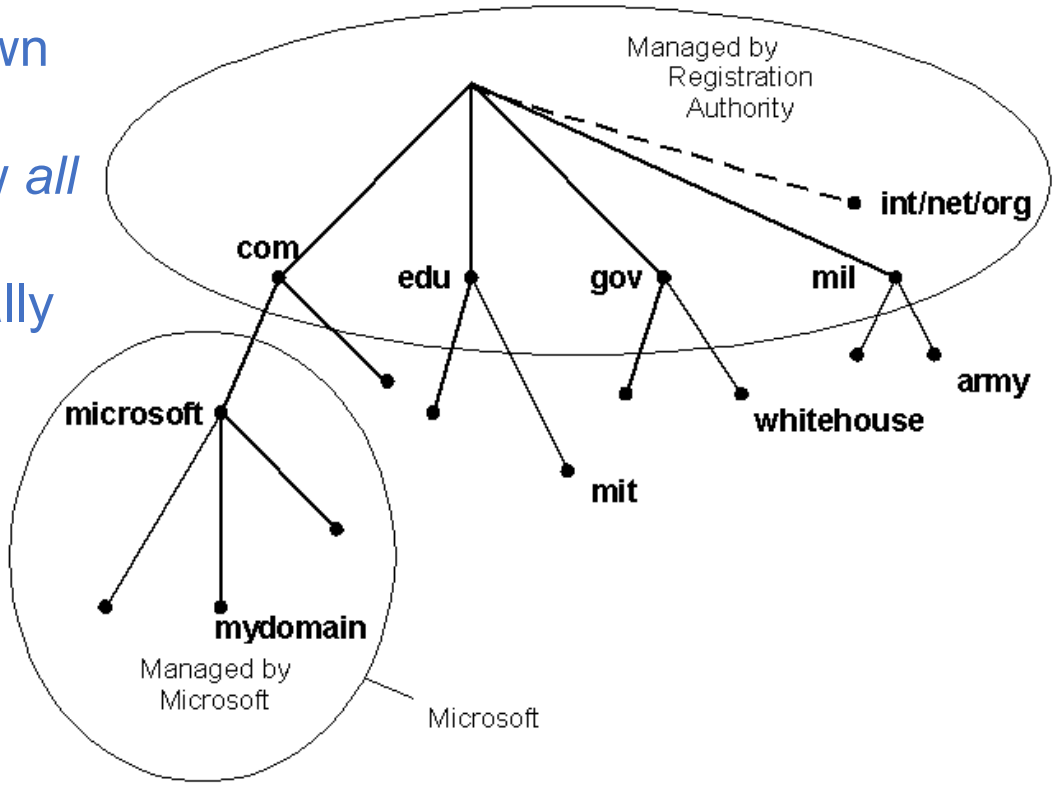
http://74.125.224.72/

How does the IP conversion happen?

Document requests use a known **Domain Name Server (DNS)**

- But each DNS doesn't know *all* address pairings
- *Hierarchical lookup* eventually reach the root DNS servers
- Caching frequently visited servers at each tier

DNS resolution is an example of an *open standard*



A Brief History of The Internet (continued)

1983

- First (and “temporary”) top-level DNS = dot-arpa
- Jon Postel’s suggestion to distinguish by ***type*** dot-edu, dot-gov, dot-mil
- Others wanted to distinguish by ***geography*** dot-uk etc. and this approach is adopted in October 1984
  - ISO-3166 dictates Country Code Top Level Domains (ccTLD) such as .uk, .au, .us, etc.

Both still in operation at the moment

A History of The Internet (continued)

1980 – early 1990s

- American **National Science Foundation (NSF)** funding maintains all key services
- European involvement in decision making, partially commercial
- EU backed International **Telecomms Union's (ITU)** proposed **OSI** as an alternative to TCP/IP but it fails to take off

1991

- Deregulation of naming to **Regional Internet Registries (RIR)**
- The **Internet Society (ISOC)** formed to formalise governance process but key decisions still made without their input

US Government holds a major level of control over the system

A History of The Internet (continued)

1991

- Tim Berners-Lee invents the world wide web or at least it's foundations, **Hyper Text Mark-up Language (HTML)** and **Hyperlinking**

1994

- NFS paying for thousands of commercial registrations per month, an untenable situation

1995

- Commercial ISPs had emerged as front runners to control naming
- **Network Solutions (NSI)** charges a fee for registration of sub-domains and controlled (existing) top-level domains .com, .net, .org, .edu

Can you register cocacola.com as a domain?

A History of The Internet (continued)

1995

- NSI passes 30% of cost of registering any TLD to the US Government which will be rules as illegal in an anti trust lawsuit
- www.shitakemushrooms.com registration attempt highlights censorship of the system for registering names

1996

- Trade-mark names in second level naming starts becoming an issue
- **WIPO - The World Intellectual Property Organisation** formed to arbitrate Trade Marks, but who are these people and how do they exert power?
  - In general favours ????

So who decides what domains get how many numbers and which names?

US DOC issues contract for managing naming services

→ Internet Corporation for Assigned Names and Numbers (ICANN) holds authority in it's Internet Assigned Numbers Authority (IANA)

→ Which in turn delegates to the Regional Internet Registries (RIR)

→ Which in turn delegates to ISP's, Telecomms groups and Academic Institutes (among others)

The three main top level players in contention to control how this works

- US Department of Commerce
- ISOC (Internet Society)
- Council of Registrars (CORE)

ICANN Controls and Problems

By 2000 there were still only 5 generic TLDs.

- ICANN added a few: .info .museum .aero ?

Rejection of the dot-xxx domain name in 2007 was found to be wrong in court

- Happened initially because of US influence according to some

Revenue generation remains a hot topic with ICANN

US **Department of Commerce (DoC)** was supposed to cede control over **IANA (Internet Assigned Numbers Authority** – the main part of ICANN) but retained authority of IANA though didn't use it

- And in 2006 the DoC renewed contract with ICANN

Judge: Terror bomb victims CAN'T seize Iran's domain name as compensation

ccTLDs aren't like cars or houses

By Kieren McCarthy in DC, 13 Nov 2014

A judge in Washington DC has ruled that a country's entire internet registry cannot be seized, averting a global diplomatic crisis.

In a ruling [PDF] made earlier this week but released late last night, Judge Royce Lamberth focused in on a single argument presented by DNS overseer ICANN that country code top-level domains (ccTLDs) are not "attachable property" because they "exist only as they are made operational by the ccTLD managers".

Lawyers for nine US citizens injured in an Iran-financed bombing in Jerusalem back in 1997 turned to the internet in an effort to recoup millions of dollars awarded to them against the government of Iran more than a decade ago. They wanted Iran's dot-ir top-level domain handed over as part payment of that debt.

The judgment went against the effort however, stating:

"A ccTLD, like a domain name, cannot be conceptualized apart from the services provided by these parties."

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SPOTLIGHT

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Inside the EYE of the TORnado: From Navy spooks to Silk Road

Learning goals

Where did the Internet come from?

ARPA NET and US millitary research

Who decides who owns a given web domain?

It's complicated, ICANN, WIPO, the US govt

Who are the major stakeholders when it comes to decision making about how the online world works?

ISOC – Large companies and the US Gov