

---

# The IETF: A Decentralized Voluntary Standards Process

SES 2002

Scott Bradner  
Harvard University  
sob@harvard.edu

SES.02-1

## The IETF

---

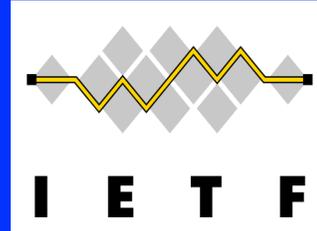
- ◆ The Internet Engineering Task Force
- ◆ standards development for the Internet
- ◆ since 1986
- ◆ international
  - most recent meeting - Yokohama in July
- ◆ individuals not organizations
- ◆ no defined membership
- ◆ scale: about 2,000 attendees in Yokohama
  - thousands more on mailing lists (from 100s of companies)
- ◆ under umbrella of the Internet Society (ISOC)
  - no distinct legal entity

SES.02-2

## An Engineering Organization

---

- ◆ vendors
- ◆ users
- ◆ network operators
- ◆ academics
- ◆ researchers
- ◆ all as individuals
- ◆ supported by meeting fees  
ISOC supports some functions e.g., RFC Editor



SES.02-3

## The IETF Structure

---

- ◆ most work done on mailing lists  
plus 3 times a year face-to-face meetings
- ◆ individuals or groups request BOFs  
exploratory meeting - may lead to working group
- ◆ working groups for specific projects  
currently 135 working groups  
restrictive charters with milestones  
working groups closed when their work is done
- ◆ working groups gathered together into Areas  
each area has 1 or 2 Area Directors (ADs) - area managers

SES.02-4

## IESG

---

- ◆ Internet Engineering Steering Group
- ◆ ADs + IETF chair
- ◆ IETF consensus determination and standards approval body
  - process & technical review of proposals for RFCs

SES.02- 5

## IETF “Standards”

---

- ◆ standards only because people use them
- ◆ no formal recognition
- ◆ no submitting to “traditional” bodies
  - but people keep trying to help us get our standards “approved”
- ◆ “RFC” means “RFC” but does not mean “standard”
  - RFC is IETF publication series
  - many types of RFCs
    - standards track & BCP
    - Informational, Experimental, historic
    - technology, process, history, general information, jokes

SES.02- 6

## Relationships:

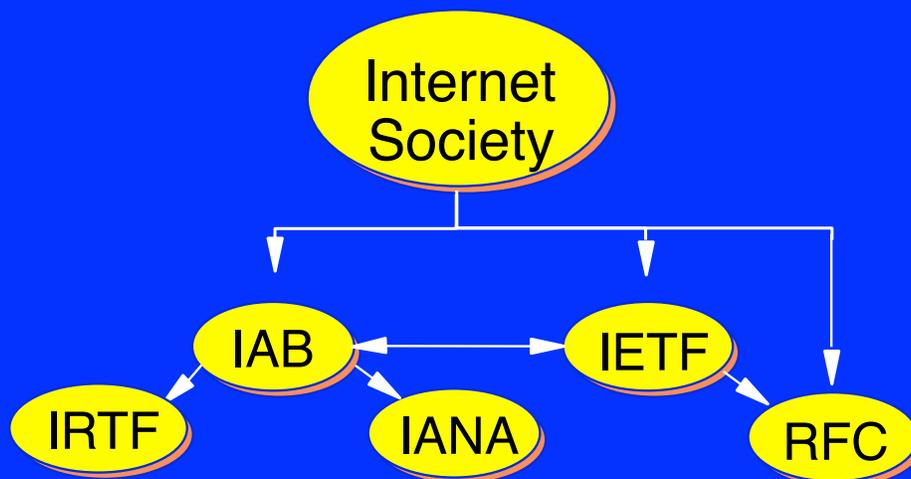
---

- ◆ liaisons / representatives  
ITU-T, ISO study groups, ATM Forum ...
- ◆ share people with other organizations  
more effective than formal liaisons  
but confuse other standards organizations
- ◆ growing area but culture clash  
IETF is mostly bottoms up  
competing architectural models
- ◆ new-work mailing list  
to pre announce new working groups and BOFs  
for representatives of other standards groups

SES.02-7

## Top Level View

---



SES.02-8

## Internet Research Task Force (IRTF)

---

- ◆ focused on long term problems in Internet
  - Authentication Authorization Accounting Architecture
  - Crypto Forum
  - End-to-End
  - Group Security
  - Internet Digital Rights Management
  - Interplanetary Internet
  - Network Management
  - Name Space
  - Reliable Multicast
  - Routing
  - Services Management

SES.02- 9

## Internet Architecture Board

---

- ◆ provides overall architectural advice
  - to IESG, IETF & ISOC
- ◆ appoints IRTF chair
  - approved IRTF research groups
- ◆ advises IESG on IETG working groups
- ◆ selects IETF-IANA
- ◆ oversees RFC Editor
- ◆ hosts workshops

SES.02- 10

## Internet Assigned Number Authority (IANA)

---

- ◆ assigns numbers and keeps them from colliding
  - protocol numbers
  - IP addresses
    - mostly delegated to IP Address registries
  - domain names
    - mostly delegated to DNS name registries
- ◆ functions split with the creation of ICANN
  - Internet Corporation for Assigned Names and Numbers
  - independent corporation to take over IANA functions
  - contract with US government

SES.02-11

## RFC Editor

---

- ◆ was Jon Postel et al
  - now et al
- ◆ [rfc-editor@rfc-editor.org](mailto:rfc-editor@rfc-editor.org)
- ◆ funded by the Internet Society
- ◆ semi-independent
  - asks IESG for advice on publishing RFCs
  - but can exercise own discretion
  - presumption is to publish technically competent IDs
  - which can be a conflict with IESG/IETF

SES.02-12

## IETF Secretariat

---

- ◆ located physically
  - Foretec - Reston Virginia
  - about 6 FTEs
- ◆ funded from IETF meeting fees
- ◆ runs
  - plenary meetings
  - mailing lists
  - Internet-Draft directory
  - IESG teleconferences
- ◆ coordinates
  - day to day work of IESG and working groups

SES.02-13

## Selecting IETF Management

---

- ◆ IESG, IAB, & IETF Chair have 2-year terms
- ◆ picked by a nominations committee (nomcom)
  - nomcom chair appointed by ISOC president
- ◆ members selected randomly from list of volunteers
  - volunteers have to have been at 2 of last 3 IETF meetings
  - very* random selection process (RFC 2777)
- ◆ get list of jobs to fill from IETF chair
  - IETF chair, IESG & IAB members
- ◆ nominate one person for each job
  - IESG approved by IAB, IAB approved by ISOC BoT

SES.02-14

## IETF Standards Process

---

- ◆ “rough consensus and running code”
  - rough consensus required not unanimity
  - interoperable implementations needed to advance standard
- ◆ multi-stage standards process
  - Proposed Standard: good idea, no known problems
  - Draft Standard: multiple interoperable implementations
  - Standard: market acceptance

SES.02-15

## IETF Areas

---

- ◆ Applications Area
- ◆ General Area
- ◆ Internet Area
- ◆ Operations and Management Area
- ◆ Routing Area
- ◆ Security Area
- ◆ Sub-IP Area
- ◆ Transport Area

SES.02-16

## A Distributed Process

---

- ◆ most IETF work is on mailing lists
  - face-to-face time is very small (a few hours per year)
- ◆ open subscription mailing lists
  - hundreds of subscribers on each list (thousands on some)
- ◆ unmoderated discussions
- ◆ editors/authors fold consensus points into working documents
  - called Internet Drafts
- ◆ chair(s) charged with determining consensus
  - note: “rough consensus”

SES.02-17

## A Distributed Process, contd.

---

- ◆ Working Group consensus generally determined by issuing a “Working Group Last-Call”
  - a specific request to the working group email list for comments
- ◆ WG forwards consensus documents to IESG for review
- ◆ IESG first issues “IETF Last-Call”
  - a specific request to the IETF Announce list for comments
- ◆ i.e., aggressive attempt to ask community for input
  - but is the IETF “open”?

SES.02-18

## Open?

---

- ◆ IETF (and other SDOs) often described as “open voluntary standards organizations”
  - open, in that anyone can join
    - in some SDOs you have to pay, but anyone can pay
    - voluntary, in that no one is forced to use the standards
- ◆ some disagreement on meaning of “open”
  - to some “open” means that potentially effected parties know about effort and can comment
  - IETF does not have a process to be sure that potentially effected parties are notified of IETF work in their area

SES.02-19

## Public Policy Input

---

- ◆ design choices of technology can dictate usage
- ◆ standards organizations face many such design choices
  - e.g., support for strong end-to-end encryption
  - e.g., digital rights management
  - e.g., support for message modification between sender and receiver
  - e.g., support for “walled garden” architectures
  - e.g., support for wiretapping

SES.02-20

## Lawful Interception

---

- ◆ IETF [www.ietf.org/mailman/listinfo/raven](http://www.ietf.org/mailman/listinfo/raven)

“raven” discussion in IETF resulted in a decision to not mandate intercept features  
technical and logical reasons



- no consistent international definition
- no way to open a hole “just” for law enforcement
- IETF encourages end-to-end encryption

SES.02-21

## Intellectual Property Rights

---

- ◆ IPR is a fact of life
  - some companies get > 1,000 patents a year
  - protection and barter
- ◆ IPR makes standards process much harder
  - what is a fair license?
- ◆ can not just standardize IPR-free technology
  - IPR can show up later
  - non-involved companies or submarine patents
- ◆ idealistic people in standards organizations are a problem
  - patents vs. good of the community

SES.02-22

## IETF IPR Rules

---

- ◆ mostly disclosure-based
  - IPR holders (submitters or 3rd parties) must disclose relevant IPR or not take part in WG discussions
  - includes patent applications
- ◆ working group take IPR claims into account in selecting technology
- ◆ IETF currently looking at its IPR policies
  - new IPR Working Group
  - [ipr-wg-request@ietf.org](mailto:ipr-wg-request@ietf.org)
  - archive at: [www.ietf.org/mail-archive/working-groups/ipr-wg/current/maillist.html](http://www.ietf.org/mail-archive/working-groups/ipr-wg/current/maillist.html)

SES.02-23

---

thank you for your attention

SES.02-24