

IETF Structure and Internet Standards Process

Suppose you wanted to build an open organization to control and management a large network...

Originally: Scott Bradner

The IETF



- **Internet Engineering Task Force**
- **Formed in 1986**
- **Was not considered important for a long time - good!!**
- **Not government approved - great!!**
- **People not companies**
- **www.ietf.org**
- *“We reject kings, presidents and voting. We believe in rough consensus and running code”*

Dave Clark

IETF Overview



- IETF has **no** members, **no** voting
- 1,200 to 2000 at 3/year meetings, *more* on mail lists
- 124ish **working groups** (where real work happens)
- If it matters to the Internet, it matters to IETF
- **7 areas** (for organizational convenience)
 - APP, RAI, INT, OPS, RTG, SEC, TSV
- IETF Management: **IESG** (ADs, chosen by community)
- Architectural guidance & liaisons: **IAB** (also chosen by community)
- Produces **standards** and other **documents**
- www.ietf.org

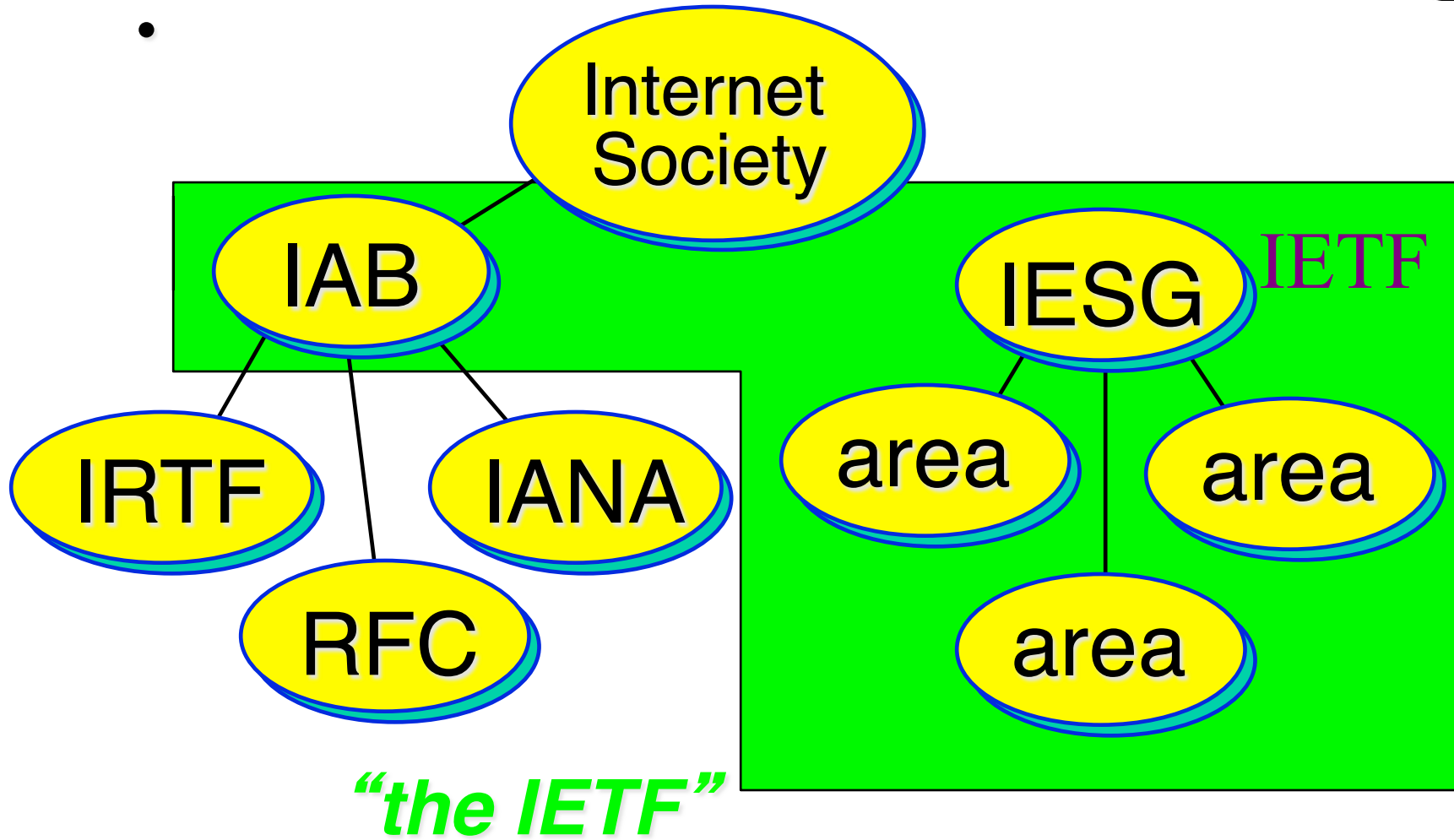
IETF “Standards”



- **IETF standards not standards “because we say so”**
- **Only standards if/when people use them**
- **No formal recognition**
- **No submitting to “traditional” standards bodies**
- **Formal process of implementation and use makes something a standard**



Organization of the IETF



The Internet Society (ISOC)



- Non-profit, non-governmental, international, professional membership organization
- 100 organization and 20,000 individual members in over 180 countries
- Provides organizational and administrative home for IETF
- Legal umbrella, insurance, etc.
- The ISOC Board of Trustees part of IETF appeal chain
- The ISOC president appoints chair of IETF nomcom
- IAB chartered by the ISOC
- The ISOC president is on the IAB mailing list & calls
- IETF (through IAB) appoints 3 ISOC trustees
- [join at www.isoc.org](http://www.isoc.org)

Internet Research Task Force (IRTF)



- Focused on **long term** problems in Internet
 - Anti-Spam
 - Crypto Forum
 - Delay-Tolerant Networking
 - Internet Congestion
 - Internet Measurement/Management
 - IP Mobility Optimizations
 - For more information see <http://www.irtf.org>

Internet Architecture Board (IAB)



- Provides overall **architectural advice** to the IESG, the IETF & the ISOC
- Advises the IESG on IETF working group formation
- Deals with IETF external liaisons
- Appoints the IRTF chair
- Selects the IETF-IANA
- Oversees the RFC Editor
- Hosts workshops
- Chartered by the ISOC

Internet Assigned Number Authority (IANA)



- **Assigns parameters and keeps them from colliding**
 - **protocol numbers and port numbers**
 - **IP addresses**
 - **mostly delegated to the 4 (going on 5) IP Address registries**
 - **domain names**
 - **deals with top level domains (TLDs)**
 - **rest 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**
 - **Under contract with US government**
 - **Now IETF-IANA and non-IETF-IANA**

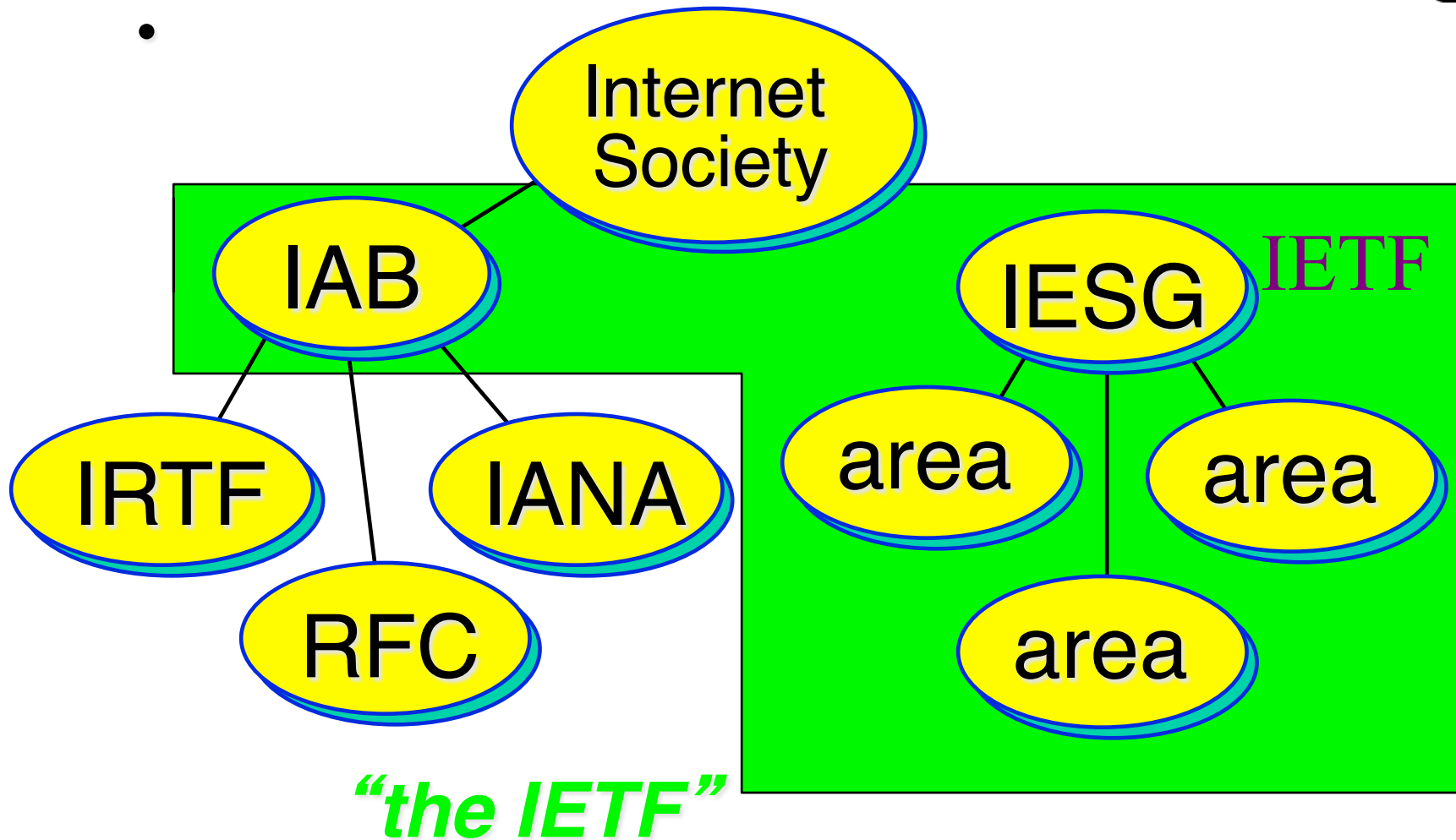
RFC Editor



- **Historically Jon Postel and helpers**
- **Now a small group funded by the ISOC**
 - **rfc-editor@rfc-editor.org**
- **Semi-independent**
 - **Gets requests to publish IETF IDs from IESG**
 - **Gets requests to publish independent informational and experimental RFCs**
 - **asks IESG for advice on publishing independent RFCs but can exercise own discretion**
 - **presumption is to publish technically competent IDs which sometimes is a conflict with IESG**



Organization of the IETF





Area Directors (ADs)

- **Nominated by the community – this include all IETF members**
- **Selected by nomcom - a volunteer nomination committee**
- **Responsible for *setting direction* in Area**
- **Responsible for *managing process* in Area**
 - **approve BOFs & working group charters**
 - **then go to IESG & IAB for final approval**
- ***Reviews* working group documents - 2000 pages/month**
- **Most Areas have 2 ADs**

Internet Engineering Steering Group (IESG)



- **IETF Chair + rest of ADs**
- **IETF process management and RFC approval body**
- **Approves WG creation**
- **Reviews & approves publication of IETF documents**
 - **reviews and comments on non-IETF submissions**
- **Multi-disciplinary technical review group**

IETF Secretariat



- **Organizes/Coordinates**
 - plenary meetings
 - mailing lists hosted by IETF
 - Internet-Draft directory
 - IESG teleconferences
 - day to day work of IESG and working groups
- **Provided by some company**
- **Funded from IETF meeting fees & (soon) ISOC**

Selecting IETF Management



- **RFC 3777/6869 describes process**
- **IESG & IAB members normally have 2-year terms**
- **Picked by a nominations committee (nomcom)**
 - **nomcom chair appointed by the ISOC president**
- **nomcom selects community nominees for each job**
 - **reviews one half of the IESG, half of the IAB each year**
 - **includes the IETF chair**
 - **IESG approved by IAB, IAB approved by the ISOC BoT**
- **nomcom selected randomly from list of volunteers**
 - **volunteers have to have been at 3 of last 5 IETF meetings**
 - **very random selection process**

Working Groups



- **This is where the IETF primarily get its work done**
- **RFC 2418/3934 describes WG operation**
- **Working group focused by charter agreed between chair(s) and area director**
 - **restrictive** charters with deliverables and **milestones**
 - working groups **closed** when their work is done
- **Charter approved by IESG with IAB advice**
- **AD with IESG has final say on charter & chair(s)**

Working Groups (continued)



- “...**rough consensus** and running code.”
- **No formal voting**
 - can do show of hands or hum
- **Does not** require unanimity
- **Disputes resolved by discussion and **implementation****
- **Mailing list and face-to-face meetings**
 - **most work happens on mailing lists**
 - **all decisions must be verified on mailing list**
 - **face-to-face discussion to resolve disagreements**

IETF Documents



- All **open** - no “confidential contributions”
- Developed as Internet-Drafts
 - **anyone** can submit - “expire” in 6 months
 - **some** IDs are working group documents
- Published as RFCs
 - archival publications (never changed once published)
 - different types: (not all RFCs are standards!)
 - informational, experimental, BCP, standards track, historic
- 3-stage standards track
 - Proposed Standard, Draft Standard, Internet Standard
- Interoperability **not** conformance



Working Documents

- **Internet-Draft - IDs**
 - **input to the process or for background information**
 - **no admissions control** other than IPR statements
 - **anyone can submit an ID**
 - **zapped** from IETF directory after 6 months
 - **but many mirrors exist**
 - **almost all RFCs must pre-exist as IDs**
 - **exceptions: some RFCs created by IANA or RFC Editor**

What is a RFC?



- IETF document publication series
- RFC == Request for Comments
 - now just a name
 - now tend to be more formal documents than early RFCs
- Over 6000 RFCs
 - RFC 1 *Host Software* - Apr 7 1969
- “Not all RFCs are standards”
 - see RFC 1796
 - though some vendors imply otherwise
- Many types of RFCs, key to understanding significance

RFC Repository Contains:



- Standards track
 - OSPF, IPv6, IPsec ...
- Obsolete Standards
 - RIPv1
- Requirements
 - Host Requirements
- Policies
 - Classless InterDomain
 - Routing
- April fool' s day jokes
 - IP on Avian Carriers ...
 - ... updated for QoS
- Poetry
 - 'Twas the night before startup
- White papers
 - On packet switches with infinite storage
- Corporate documentation
 - Ascend multilink protocol (mp+)
- Experimental history
 - Netblt
- Process documents
 - IETF Standards Process

Standards Track RFCs:



- **Start at Proposed Standard (PS)**
 - good idea, no known problems
 - implementation required at AD discretion
- **Advance to Draft Standard (DS)**
 - stable Proposed Standard specification
 - multiple interoperable implementations
 - note IPR restriction
- **Advance again to Internet Standard (STD)**
 - Draft Standard with wide deployment and use
- **Best Current Practices (BCP)**
 - generally policies or IETF procedures
 - (best way we know how)



IETF Standards Process

- **(Protocol) Specification published as Internet Draft**
- **Discussed in a working group - creates revised IDs**
- **ID sent to IESG after working group consensus**
- **IESG issues IETF Last Call (2 weeks)**
 - **anyone can comment**
 - **IESG considers comments and its own review**
may approve publication as standards track RFC
may point out issues to working group & return ID

IETF RFC Submission Process

