

Internet Engineering Task Force (IETF)

Scott O. Bradner
November 18, 2015

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Agenda



- History
- Purpose
- Structure
- Management
- Process
- Documents
- IPR Rules

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IETF History

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Internet Engineering Task Force



- Formed in 1986
 - expansion of US ARPANET-related government activities
 - Internet Configuration Control Board (ICCB) (1979)
 - Internet Activities Board (1983)
 - No current government role
- International
- Was not considered important for a long time - good!!
- Not “government approved” - great!!
 - Although funding support from U.S. Government until 1997

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Internet Engineering Task Force

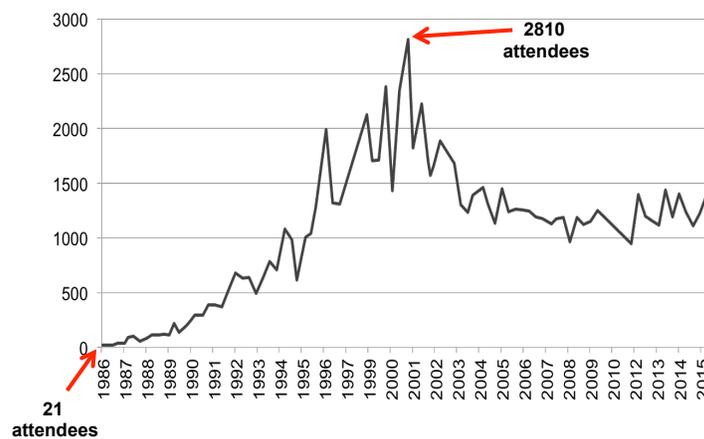


- **Internet Standards R Us**
most Internet-related standards were developed by, or are maintained by, the IETF
not including physical network or page display standards
- **Does not exist , no members, no voting**
The IETF is “*an organized activity of the Internet Society*”
- **1K to 1.5K people at 3/ year meetings**
many, many more on mail lists

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IETF Meeting Attendance



Individual participation



- Participation, not membership
- Individuals participate, not companies
- The power of a technical argument is what determines the reception of an idea
 - Not by the company they work for or the organization they represent

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People, not companies, contd.



- Representatives from other SDOs are seen as people with specific knowledge of the work of the SDO (at least in an area)
 - but they do not get more consideration than anyone else with a proposal
- Same for representatives from government
 - Lack of formal government input to the IETF is seen as “a problem” by some

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Mantra



Dave Clark

*“We reject kings, presidents
and voting. We believe in
rough consensus and
running code”*

Dave Clark 1992

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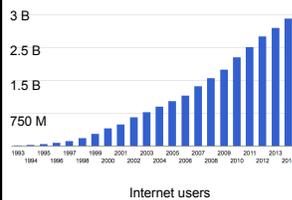
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IETF Purpose

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IETF purpose



- Develop and maintain standards for technologies used to provide Internet service or to provide services over the Internet
- Ensure that the technology:
 - Can perform needed functions
 - Will support the proper deployment and will scale
 - Is secure and can be operated securely
 - Is manageable
- IETF produces standards and other documents

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IETF “standards”

What is a mandatory standard?

A mandatory standard is a standard that requires compliance because of a government statute or regulation, an organization internal policy, or contractual requirement. Failure to comply with a mandatory standard usually carries a sanction, such as civil or criminal penalties, or loss of employment. (Source: ANSI's "Standards Management: A Handbook for Profit")

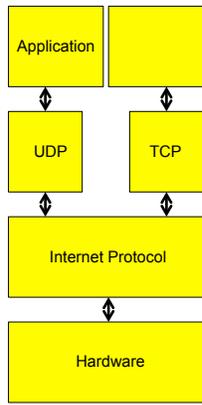


- IETF standards: not ‘because we say so’ standards
- They are standards only if people use them
 - Formal SDOs can create legally mandated standards
- No formal recognition for IETF standards
 - By governments or “approved” standards organization

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The scope of the IETF



- *'Above the wire and below the application'*
IP, TCP, email, routing, IPsec, HTTP, FTP, ssh, LDAP, SIP, mobile IP, ppp, RADIUS, Kerberos, secure email, streaming video & audio, ...
- But wires are getting fuzzy
MPLS, GMPLS, pwe3, VPN, ...
- Generally hard to clearly define IETF scope
IETF is constantly exploring the edges
e.g., (IP) telephony



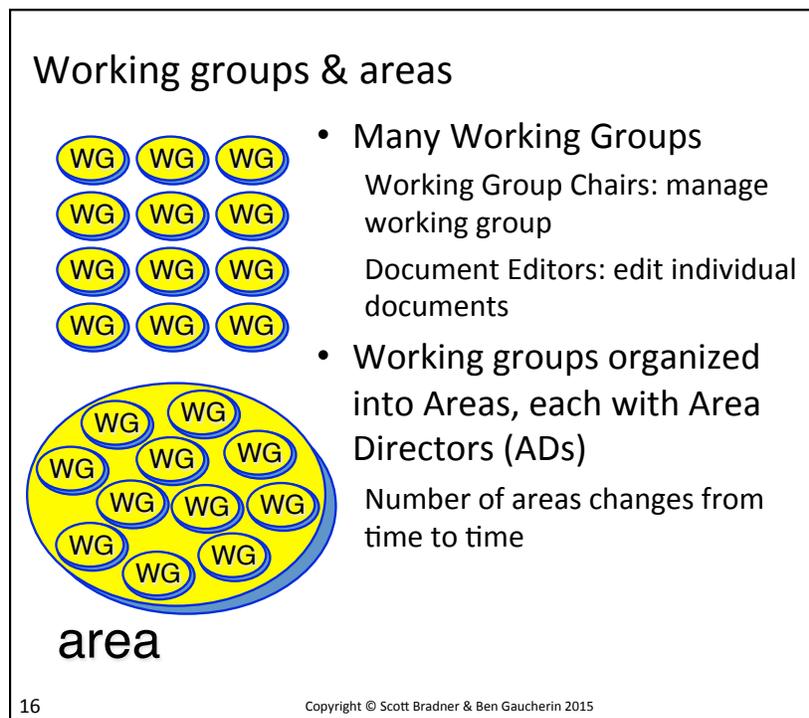
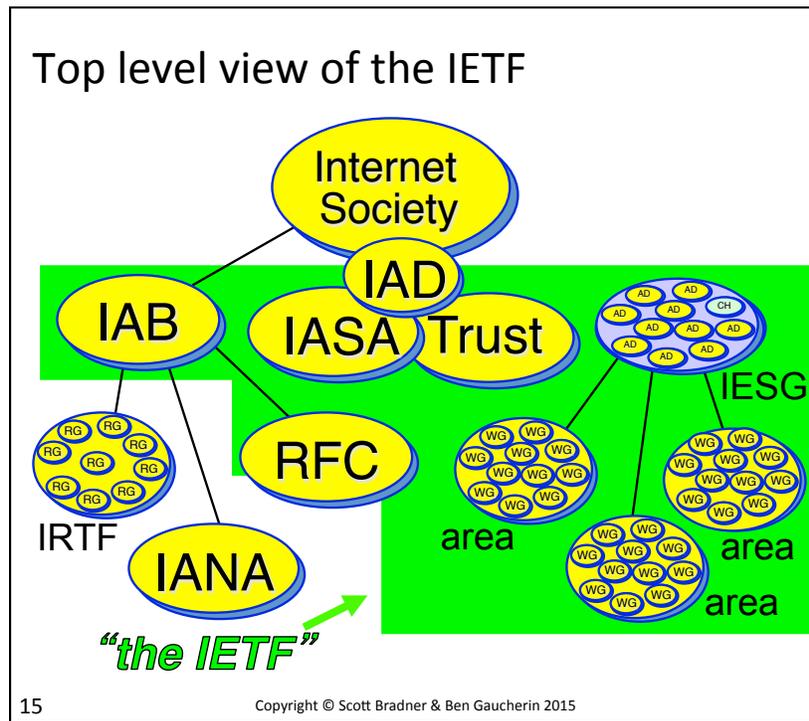
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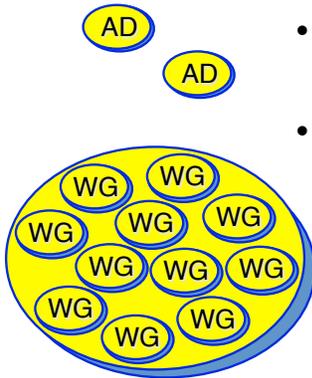
IETF Structure

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Area directors (ADs)



- Technical areas have 2 or 3 ADs
- Responsible for setting direction in Area
- Review working group documents prior to IESG review

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Area directors (ADs), contd.

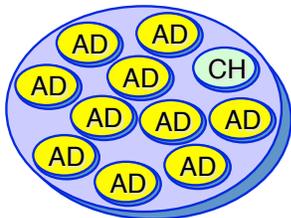


- Responsible for managing process in Area
 - Sponsor BOFs & propose working groups
 - Ensure working groups follow proper process
 - Have authority to change working group management
 - Generally with IESG consultation

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Internet Engineering Steering Group (IESG)



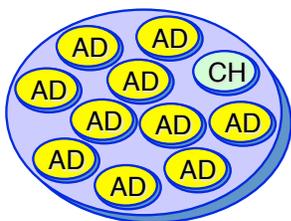
IESG

- ADs + IETF Chair
- Multi-disciplinary technical review group
- Provides cross-area pre-publication technical review of IETF RFCs
- Approves publication of IETF documents
 - Reviews and comments on non-IETF RFC submissions

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IESG, contd.



IESG

- Manages IETF process
- Approves BOFs
- Approves WG creation (with IAB advice)
- Part of appeal chain
- The IAB chair & an IAB liaison are ex-officio members of the IESG

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Internet Society (ISOC)

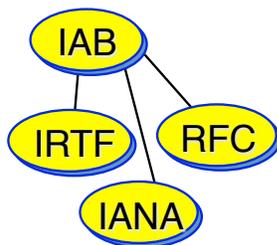


- Non-profit, non-governmental, independent, international organization
Large numbers of organizational members, individual members & chapters in many countries
- Formed in 1992 to:
Provide legal umbrella over IETF & to continue Landweber developing country workshops
- IETF agreed to come under ISOC legal umbrella in 1996
After a (long) open working-group-based discussion

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Internet Architecture Board (IAB)



- Provides overall architectural advice & oversight
to IESG, IETF, IRTF & ISOC
- Deals with IETF external liaisons
- Appoints IRTF chair
- Selects & oversees IETF-IANA
- Appoints & oversees RFC Editor

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Internet Assigned Number Authority



Internet Assigned Numbers Authority

- IANA
- Need to assign & record parameters in IETF protocols
Ports, MIME types, etc.
At the request of the IETF and directly (for some values)
- Need to manage high-level IP address assignment
Assigns address blocks to 5 regional Internet registries
Which assign addresses to ISPs and end sites



Regional Internet registries

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IANA, contd.



- IANA function performed by ICANN under contract with US government
- US reviewing IANA contract and IANA operation
- International effort to move IANA out from under US control
Congress may not agree

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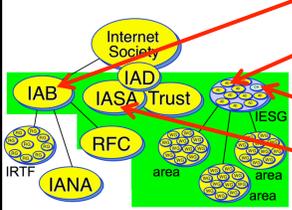
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IETF Management

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IETF management



- IAB job: 1/3 time
- AD job: half to 3/4 time
- IETF Chair job: full time
- IAOC member: 1/5 time
- Two year terms
- All volunteers
 - No salary or expenses provided
 - People are company- or self-supported
- Secretariat, RFC publication support & IAD are paid

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Selecting IETF management



The following are the seed selection that will be used on July 6, 2015 (2015-07-06).

Canadian Lottery Lotto 649
US public Debt
US intergovernmental holdings
Euromillions Lottery

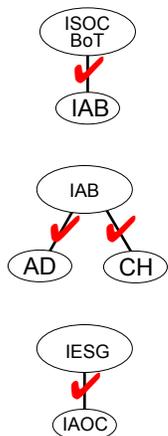
Message from the 2015 IETF
nomcom chair

- Picked by a nominations committee (nomcom)
Nomcom chair appointed by ISOC president
Process described in RFC 3777
- Members selected randomly from a list of volunteers
Requirement: be present at 3 of last 5 IETF meetings
Very random process to select from volunteers: RFC 3797

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Selecting IETF management, contd.



- Gets list of jobs to fill
List can include IETF Chair, ADs, IAB members & IAOC members
- Nomcom nominates one person for each job
IAB selections reviewed & approved by ISOC Board of Trustees
AD & IETF Chair selections reviewed & approved by IAB
IAOC selections reviewed & approved by IESG

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IETF management authority

the power of the ruler is delegated by the people and continues only with their consent.

Theodore Beza – 1579 –
summarized by George
Sabine

- IETF management can not speak for the IETF
 - Unless the consensus of the IETF is known
 - E.g., from a consensus call on the mailing list
- IETF management can not commit the IETF to an action or to the development of specific standards
 - Unless the consensus of the IETF is known and there are people interested in the work

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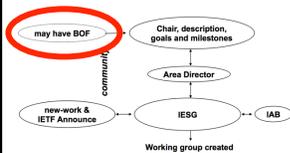
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IETF Process

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Birds of a feather sessions (BOFs)

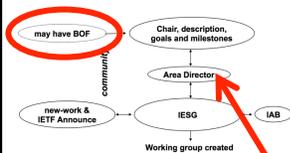


- Often precedes the formation of a Working Group
- Proposed by a group of people interested in a topic
- Need description, an agenda and an AD's approval before a BOF can be scheduled
 - Some ADs require at least an Internet draft and a mailing list discussion

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BOFs, contd.



- BOFs generally only meet once
- Can lead to a WG or can be a one time thing
- BOFs help convince an AD that the group have a good idea – one worth exploring & there are enough interested people to do the work

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Working groups

Active IETF working groups

Concluded WGs | Historic charters

Applications and Real-Time Area (art)

art Area Directors (ADs)

Ben Campbell (ben@notrnm.com)
 Alisa Cooper (alisa@googlers.com)
 Barry Leiba (barryleiba@computer.org)

art active WGs

Group	AD	Name
appsawg	Barry	ART Area General Applications Working Group
avcore	Ben	Audio/Video Transport Core Maintenance
avtext	Ben	Audio/Video Transport Extensions
bcfplis	Alisa	Binary Floor Control Protocol Bis
calext	Barry	Calendar Extensions
cdni	Barry	Content Delivery Networks Interconnection
clis	Alisa	Controlling multiple streams for H.264/H.265
codex	Ben	Internet Wideband Audio Codec
core	Barry	Constrained RESTful Environments
dbound	Barry	Domain Boundaries
dispatch	Ben	Dispatch

- This is where the IETF primarily get its work done
- Most discussions on a WG mailing list
- Face-to-face meetings focused on key issues (ideally)
 - Note: face-to-face meetings generally quite short
- “Bottoms up”
 - i.e., generally proposed by IETF participants, not ADs, IESG or IETF Chair
- Sometimes preceded by a BOF

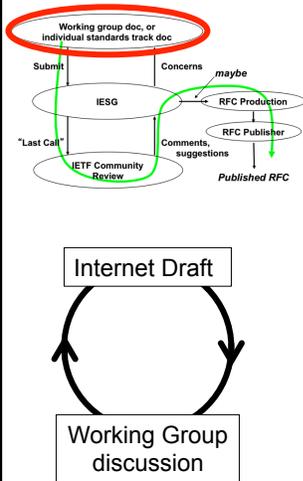
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Working groups, contd.

- Working Groups are focused by charters agreed between WG chair(s) and area director
- Restrictive charters with milestones
- Charter approved by IESG with IAB advice
- After public announcement for comments
 - Announcement goes to other SDOs to check for overlaps
- IESG has final say on charter
- Working groups are closed when their work is done

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How IETF work gets done

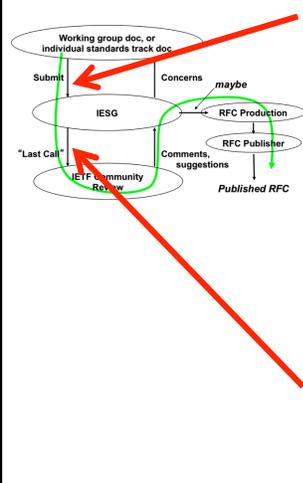


- Generally, IETF technology development is done in Working Groups but can be individual effort
- Proposal published as a working document
“Internet Draft” (ID)
- The ID is revised & republished based on working group discussion
2-digit version number appended

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How IETF work gets done, contd.

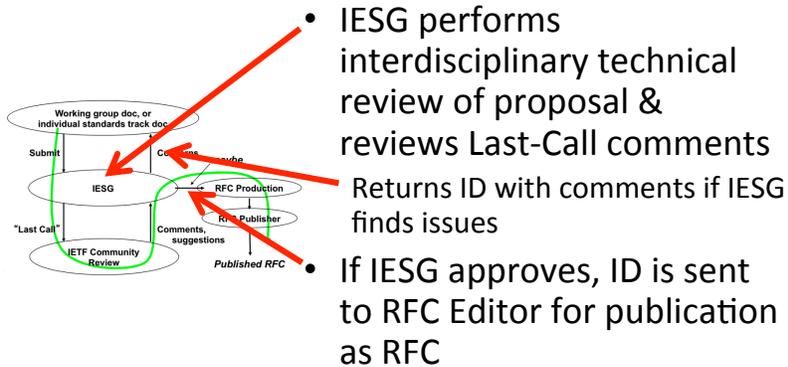


- When working group thinks it is ready, the Internet draft is submitted to IESG via AD
- AD performs a technical and process review of the ID
Returns ID to working group with comments if AD finds issues
- If AD approves, the IESG issues IETF-wide “Last Call” for comments
2-week if working group ID
4-week if individual ID

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How IETF work gets done, contd.



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Rough Consensus



- No defined IETF membership - just “participants”
- “***Rough consensus and running code...***”
- Does **not** require unanimity
But issues need to be discussed
- No formal voting (can not define a constituency)
Can do show of hands or hum - but no count
Want to gage general level of consensus

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Rough Consensus, contd.

- Disputes attempted to be resolved by discussion
 - On mailing list and in face-to-face meetings
- Conclusion can be by rough consensus
- Conclusions reached during a face-to-face meeting must be verified on mailing list
 - Not always an easy thing to do



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IETF Documents

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Legal Provisions Relating to IETF Documents – Dec 2005

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- All IETF documents are open i.e., anyone can download and make copies (in full)
- Internet Draft
 - IETF working documents
 - Some I-Ds are working group documents
- RFC (stands for “RFC”)
 - Archival publications (never changed once published)
 - Updates or corrections gets new RFC numbers

IETF document format

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Legal Provisions Relating to IETF Documents – Dec 2005

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- ASCII text is the mailing list and old document format
- English is the official language of the IETF
 - But blanket permission is given to translate any IETF document (in total) into any language for any reason
- Publishing extracts of IETF documents is also OK
 - As long as the IETF is properly acknowledged

IETF document format, contd.

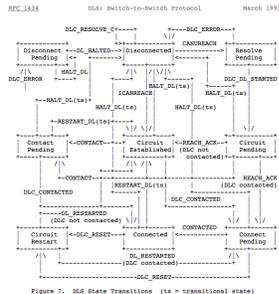


Figure 7. DLS State Transitions (ts = transitional state)

*Data Link Switching:
Switch to Switch
Protocol - RFC 1434*

- Constant discussion of alternate formats
 - IETF seen as “behind the times” - e.g., (almost) no drawings
 - XML-based format adopted after many years of trying
 - Being rolled out now
 - Text based documents will still be produced
 - Note that the old format is still readable after 44 years
 - How many other SDOs can say that?

Types of RFCs



- Standards track
 - Technical and process standards
 - BCP, Proposed Standard, Internet Standard
- Informational
 - Technical specification requirements or background
 - Corporate documentation
 - Work of other SDOs
 - April Fools Day jokes
- Experimental
 - Ready for people to try out
- Historical
 - No longer recommended
- Index provides current status

IETF Copyright rules

Copyright Policy and Trust Legal Provisions (TLP) Frequently Asked Questions

June 22, 2010

1. Copyright and the IETF Copyright Policies

1.1 Why are copyrights relevant to the IETF?

Copyright law protects all forms of creative expression, including written documents, images, diagrams, audio recordings, software code and even designs printed on fabrics. Almost all countries have some form of copyright law, and most developed countries adhere to the so-called Berne Convention on Artistic and Literary Works, which normalizes copyright protection among member countries.

Copyright is relevant to IETF because almost all written documents are protected by copyright. This includes Internet-Drafts, RFCs and all code that is included in these documents.

This FAQ addresses copyright and licensing issues relating to IETF Documents (Internet-Drafts and RFCs) and other contributions to the IETF standards process, as well as documents published as Internet-Drafts and RFCs in the Independent Stream, IAB Stream and IRTF Stream (see Topic 9).

1.2 Where can I find the IETF's policy regarding copyrights?

The IETF copyright policy is currently set out in two documents: [RFC 5378](#) and the IETF Trust's Legal Provisions Relating to IETF Documents which we sometimes refer to as the "TLP" (<http://tools.ietf.org/html/rfc5378#section-1>). For reference, superseded versions of the TLP are also cataloged at <http://tools.ietf.org/html/rfc5378#section-1>.

1.3 When did the current policy go into effect, and what about documents that were published or submitted before that?

IETF's current copyright policy in RFC 5378 became effective on November 10, 2008 and applies to all IETF Contributions submitted on or after that date and to all IETF Documents published on or after that date.

Below is a brief chronology of IETF copyright policies and their dates of effectiveness:

- The author(s) need to give non-exclusive publication rights to IETF Trust to get anything published

Mailing list submission, Internet Draft, RFC

- Also (normally) the right to make derivative works

This right required for standards track documents

- The author(s) retain all other rights

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IETF patent rules



Worry about undisclosed (submarine) IPR

- Based on the requirement that IETF participants disclose IPR when it might relate to IETF work

- Working groups take disclosed IPR into account when developing IETF specifications

- IETF does not require that specifications not have any IPR disclosures

Working group makes up its own mind on what technology to adopt

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IETF patent rules, licensing

RAND: reasonable and non-discriminatory

FRAND: Fair, Reasonable and Non-Discriminatory

- The IETF does not require that an IPR disclosures include licensing information
 - But it is requested
- The IETF does not require that working groups adopt IPR just because it has free, RAND or FRAND licensing

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Working group preferences



- IETF working groups tend to prefer technology with no known IPR claims
 - But the IETF has published many RFCs that had IPR disclosed prior to adoption
 - It is up to the working group
 - Seconded guessed by the IETF community and by the IESG

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Questions?