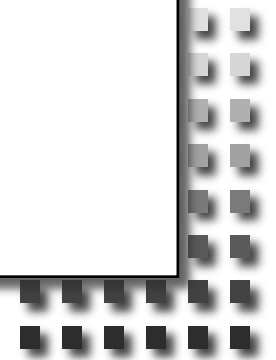




# **IETF Structure and Internet Standards Process**

***Scott Bradner  
58th IETF  
Minneapolis, MN, USA***





# Note Well

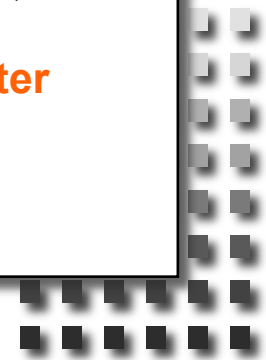
All statements related to the activities of the IETF and addressed to the IETF are subject to all provisions of Section 10 of RFC 2026, which grants to the IETF and its participants certain licenses and rights in such statements.

Such statements include verbal statements in IETF meetings, as well as written and electronic communications made at any time or place, which are addressed to:

- the IETF plenary session,
- any IETF working group or portion thereof,
- the IESG, or any member thereof on behalf of the IESG,
- the IAB or any member thereof on behalf of the IAB,
- any IETF mailing list, including the IETF list itself, any working group or design team list, or any other list functioning under IETF auspices,
- the RFC Editor or the Internet-Drafts function

Statements made outside of an IETF meeting, mailing list or other function, that are clearly not intended to be input to an IETF activity, group or function, are not subject to these provisions.

**being worked on: more later**



# The IETF

Internet Engineering Task Force  
formed 1986

other standards groups cooperate with, imitate or  
fear the IETF (but some still ignore it)

not important enough for a long time - good!!

not government approved - great!!

**people not** companies

*“rough consensus and running code”*



# IETF: Meta View

Internet standards R us

does not exist, **no** members, **no** voting

1,200 to 2K at 3/year meetings, **NK** on mail lists

1,679 & 1304 last 2 meetings (San Francisco & Vienna)

133ish **working groups** (where the stuff happens)

8 **areas** (for organizational convenience) with **ADs**

APS, GEN, INT, O&M, RTG, SEC, SUB, TSV

SUB going away

management: **IESG** (ADs, chosen by community)

architectural guidance & liaisons: **IAB**

produces **standards**







# IETF “Standards”

standards only when people **use** them

**no** formal recognition

**no** submitting to “traditional” bodies

some of them keep trying to help

# 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

can have competing architectural models

new-work mailing list

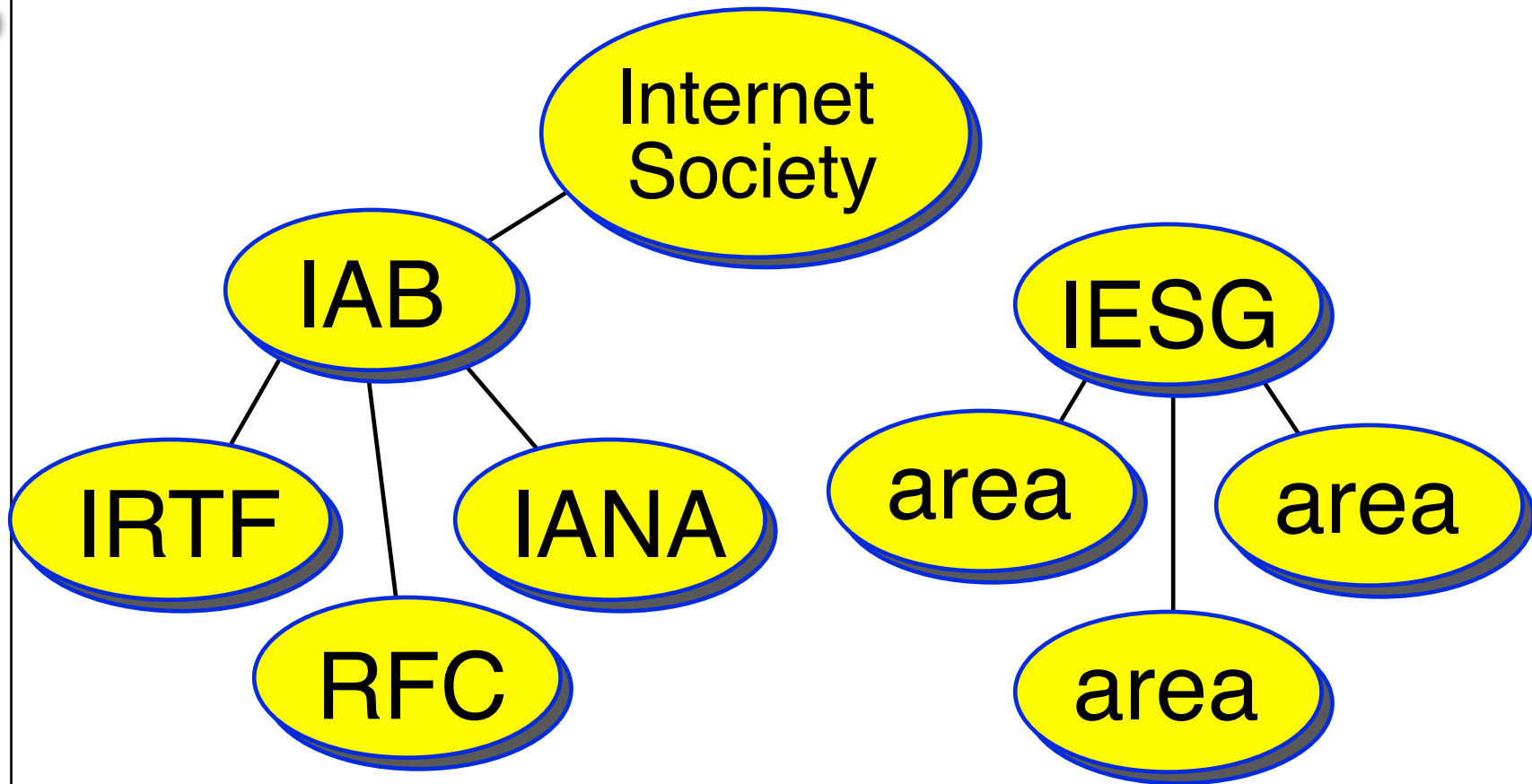
to pre announce new working groups and BOFs

for representatives of other standards groups



**working on liaison statement process**

# Organization of the IETF





# Internet Society (**ISOC**)

non-profit, non-governmental, international,  
professional membership organization

150 organization and 16,000 individual members in  
over 180 countries

provides legal umbrella & insurance for IETF

ISOC BoT part of IETF appeal chain

ISOC president appoints chair of IETF nomcom

IAB chartered by ISOC

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

Authentication Authorization Accounting Architecture

Crypto Forum

Delay-Tolerant Networking

End-to-End

Group Security

Internet Measurement

Network Management

NameSpace

Peer-to-Peer

Routing

Searchable Internet Resource Names

Services Management



**I E T F**



# Internet Architecture Board (**IAB**)

provides overall **architectural advice** to IESG,  
IETF & ISOC

advises IESG on IETF working group formation

deals with IETF external liaisons

appoints IRTF chair

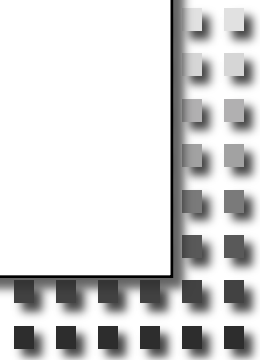
selects IETF-IANA

oversees RFC Editor

(hosts workshops)

chartered by ISOC

subject of IETF plenary session Thursday night





# Internet Assigned Number Authority (**IANA**)

assigns parameters and keeps them from colliding

protocol numbers

IP addresses

mostly delegated to IP Address registries

domain names

mostly delegated to DNS name registries

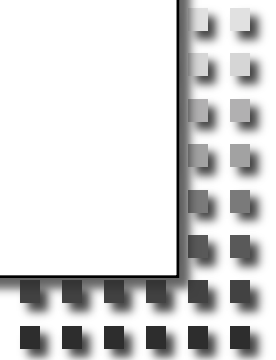
functions split with the creation of **ICANN**

Internet Corporation for Assigned Names and Numbers

independent corporation to take over IANA functions

contract with US government

now **IETF-IANA** and non-IETF-IANA





# RFC Editor

was Jon Postel et al

now (sadly) et al

[rfc-editor@rfc-editor.org](mailto:rfc-editor@rfc-editor.org)

funded by the Internet Society

semi-independent

- gets requests to publish IETF IDs from IESG

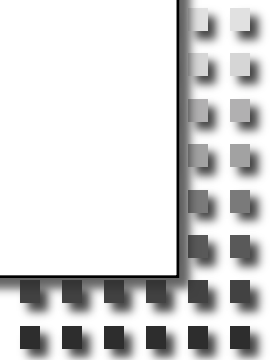
- gets requests to publish independent IDs for info or exp RFCs

  - 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







# IETF Chair

also chair of **IESG**  
selected by nomcom  
director of **General Area**  
ex officio member of **IAB**  
“Chief Talking (and traveling) Officer”



# Area Directors (**ADs**)

selected by nomcom

most Areas have 2 ADs

all but General Area

responsible for **setting direction** in Area

responsible for **managing process** in Area

approve BOFs & working groups

then go to IESG & IAB for final approval

**reviews** working group documents



# Internet Engineering Steering Group (**IESG**)

ADs + IETF Chair

IETF **process management and RFC approval** body

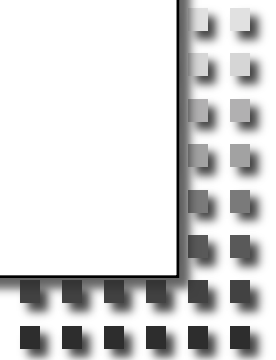
approves WG creation

reviews & approves publication of IETF documents

reviews and comments on non-IETF submissions

**multi-disciplinary technical review** group

subject of IETF plenary session Wednesday night





# IETF Secretariat

located physically

Foretec - Reston Virginia

funded from IETF meeting fees

## runs

plenary meetings

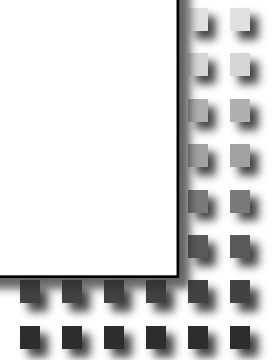
mailing lists

Internet-Draft directory

IESG teleconferences

## coordinates

day to day work of IESG and working groups





# Selecting IETF Management

IESG & IAB members normally 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

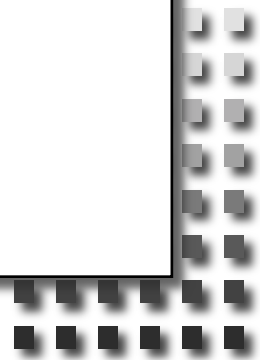
**very** random selection process (RFC 2777)

get list of jobs to fill






IETF chair, IESG & IAB members

nominate one person for each job

IESG approved by IAB, IAB approved by ISOC BoT



# Dots

-  IAB member (red)
-  IESG member (yellow)
-  Working Group chair (blue)
-  nomcom (orange)
-  local host (green)



# Working Groups

this is where the IETF primarily get its work done  
working group focused by charter agreed between  
chair and area director

**restrictive** charters with **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 - but **no** count

does **not** require unanimity

disputes resolved by discussion

mailing list and face-to-face meetings

final decisions must be verified on mailing list

taking into account face-to-face discussion



I E T F







# IETF Documents

all **open**

Internet-Drafts

**anyone** can submit - “expire” in 6 months

**some** I-Ds are working group documents

**RFCs** (stands for “RFC”)

archival publications (never changed once published)

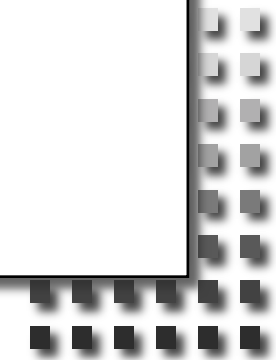
different types: (not all RFCs are standards!)

informational, experimental, BCP, standards track, historic

3-step standards track

Proposed Standard, Draft Standard, Internet Standard

**interoperability** not conformance



# What is a RFC?

RFC used to stand for Request for Comments  
now just a name

tend to be more formal documents than early RFCs

IETF document publication series

RFC 1 *Host Software* - Apr 7 1969

now over 3400 RFCs

**not all** RFCs are standards!

see RFC 1796

though some vendors imply otherwise

**many** types of RFCs





# RFC Repository Contains:

standards track

OSPF, IPsec

obsolete Standards

RIPv1

requirements

Host Requirements

policies

Classless InterDomain Routing

April fool's day jokes

IP on Avian Carriers

poetry

'Twas the night before startup

white papers

On packet switches with infinite storage

corporate documentation

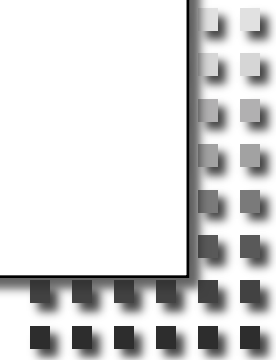
Ascend multilink protocol (mp+)

experimental history

Netblt

process documents

IETF Standards Process



# Working Papers

## Internet-Draft

random or non-random thoughts

input to the process or for information

**no admissions control** other than boilerplate (see IPR)

**zapped** from IETF directory after 6 months

but many mirrors exist

all RFCs must pre-exist as IDs

other than some IANA or RFC Editor created ones



# Standards Track RFCs:

## Best Current Practices (**BCP**)

generally policies or procedures (best way we know how)

## Proposed Standard (**PS**)

good idea, no known problems

## Draft Standard (**DS**)

stable

multiple interoperable implementations

note IPR restriction

## Internet Standard (**STD**)

wide use

**but this is theory & is under review**

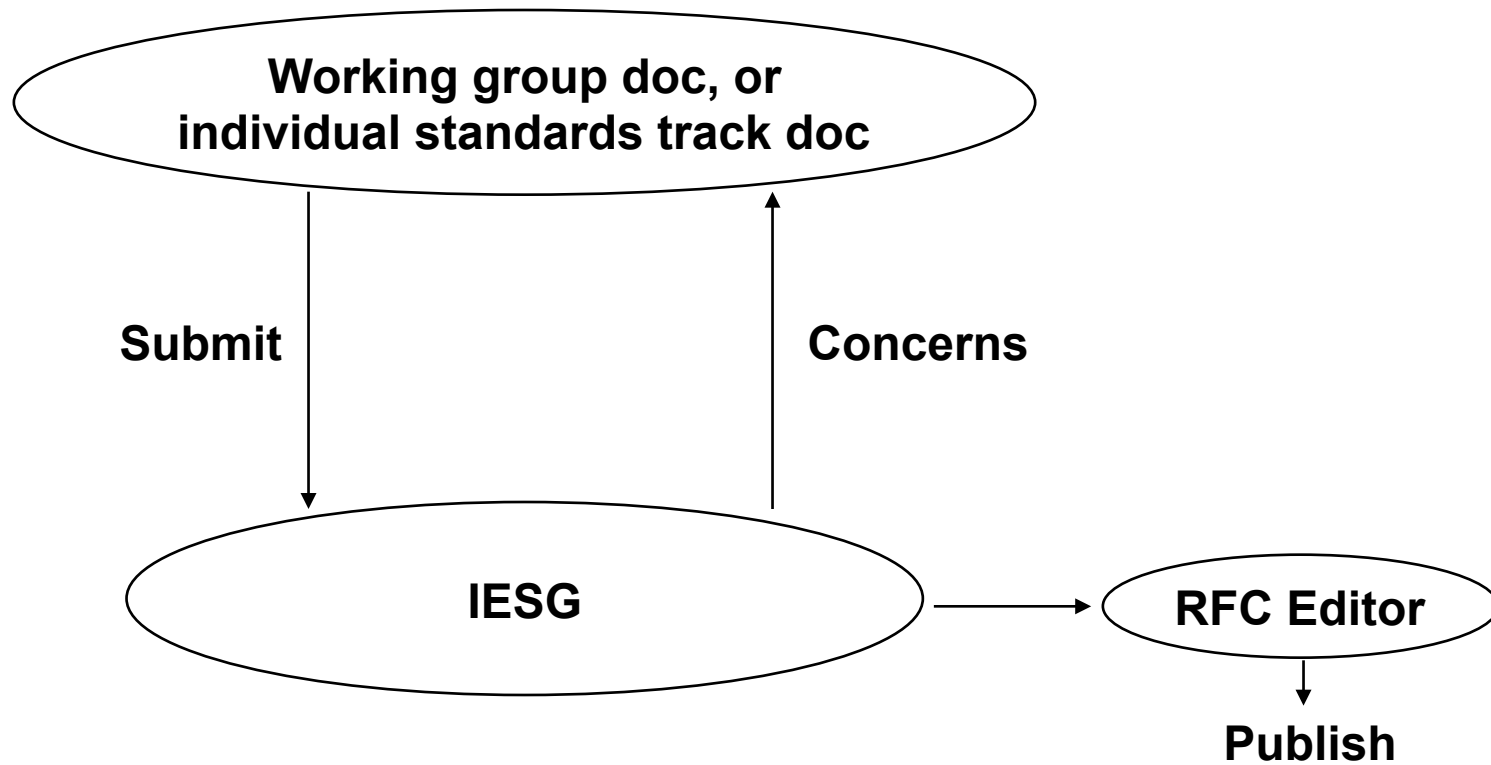




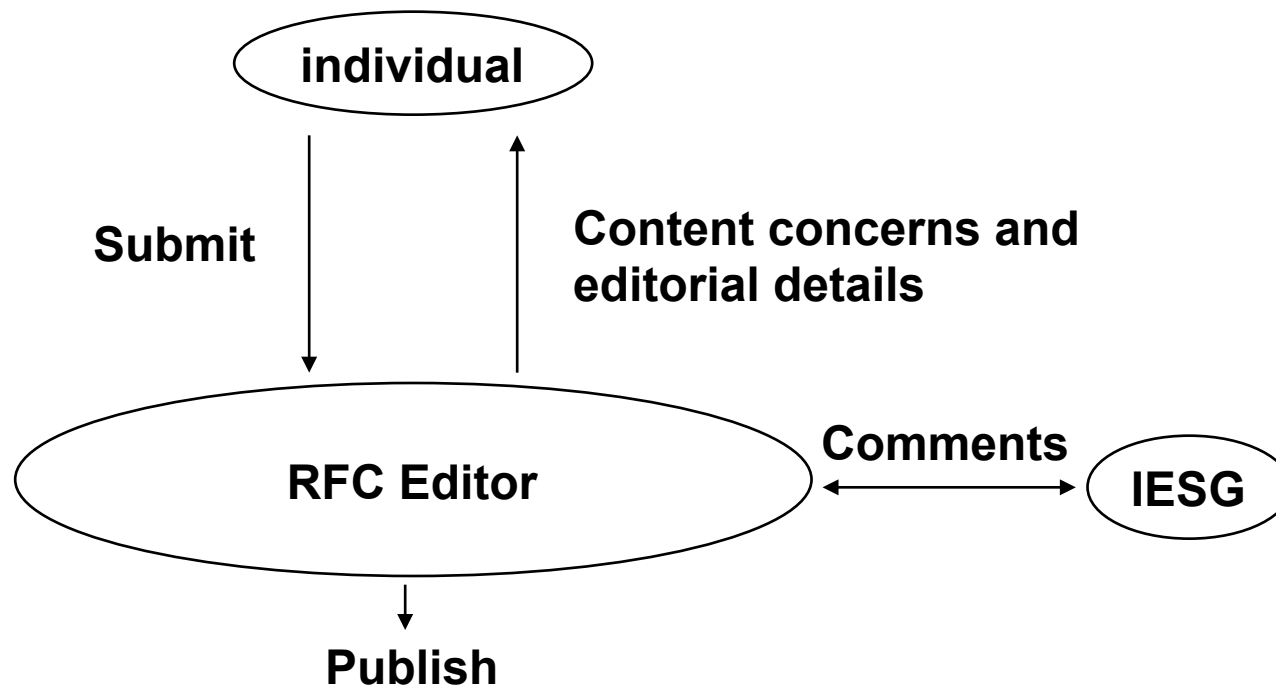
# IETF Standards Process

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  
also process for non-WG proposals (but 4-week LC)

# IETF Submissions

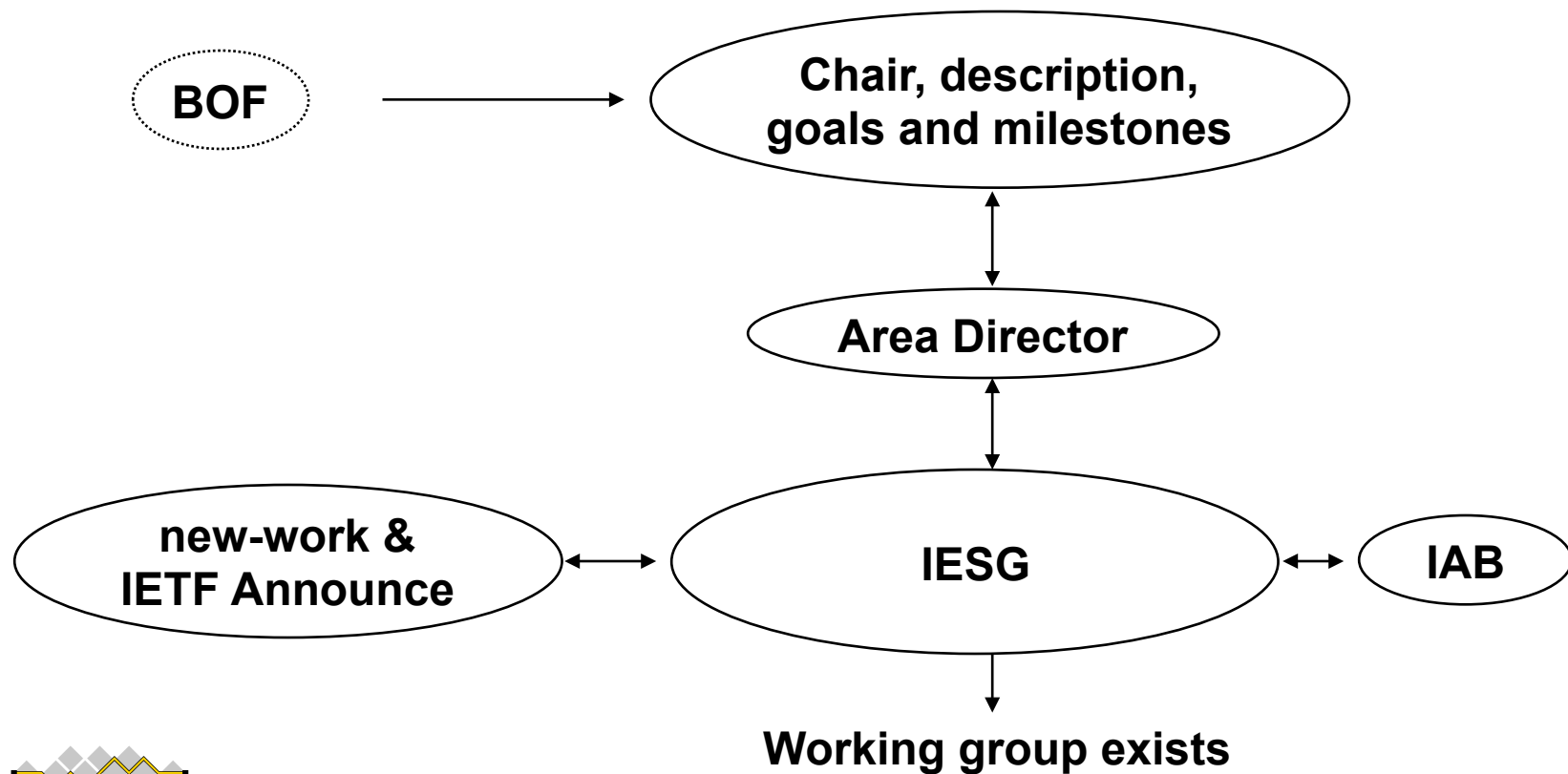


# Non-IETF Submissions





# Working Group Creation



# Appeals Process

IETF decisions can be appealed

**start appeal** at level above issue

1st to WG chair

then to Area Director

then to IESG

then to IAB

if claim is that the process (**and not the  
implementation of the process**) is broken,

then an appeal can be made to the ISOC Board



# IPR (patents)

IETF IPR rules in RFC 2026 Section 10  
currently working on **clarifying** these rules  
in ipr working group

current IETF rules

- require **disclosure** of own IPR in  
own submissions & submissions of others
- “**reasonably and personally**” known IPR
- no patent search required

**WG** takes IPR into account when choosing technology  
push from open source people for RF-only process  
consensus to not change to RF-only  
but WGs **tend** to want RF or IPR-free



# Copyright

author(s) need to give publication rights to ISOC  
(IETF) if to be published at all

but **authors retain** most rights

mandatory ID boilerplate statement

1/ subject to RFC 2026 Section 10

2/ above but no right to produce derivative works

3/ just publish as ID

IPR WG will clarify copyright rules also

draft of changes in IESG review



# IETF Areas

## IETF Chair & AD for General Area

Harald Alvestrand <chair@ietf.org>

## Applications (app)

Ned Freed <ned.freed@mrochek.com>

Ted Hardie <hardie@qualcomm.com>

## Internet (int)

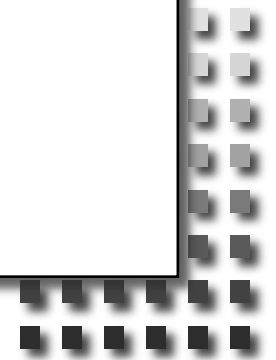
Thomas Narten <narten@us.ibm.com>

Margaret Wasserman <margaret.wasserman@nokia.com>

## Operations & Management (ops)

Randy Bush <randy@psg.com>

Bert Wijnen <bwijnen@lucent.com>



# IETF Areas (cont.)

## Routing (rtg)

Bill Fenner <fenner@research.att.com>

Alex Zinin <zinin@psg.com>

## Security (sec)

Steve Bellovin <smb@research.att.com>

Russ Housley <housley@vigilsec.com>

## SUB-IP (sub) - Ad Hoc Area

Bert Wijnen <bwijnen@lucent.com>

Alex Zinin <zinin@psg.com>

## Transport Services (tsv)

Allison Mankin <mankin@psg.com>

Jon Peterson <jon.peterson@neustar.biz>



**I E T F**



**go ye forth and participate!**

