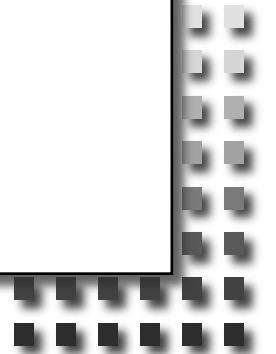




# **IETF Structure and Internet Standards Process**

***Scott Bradner  
61st IETF  
Washington, DC***





# 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

*“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

127ish **working groups** (where real work happens)

If it matters to the Internet, it matters to us

8 **areas** (for organizational convenience)

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

SUB “temporary” since 2001, almost finished now

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

Architectural guidance & liaisons: **IAB (also chosen)**

Produces **standards** and other **documents**





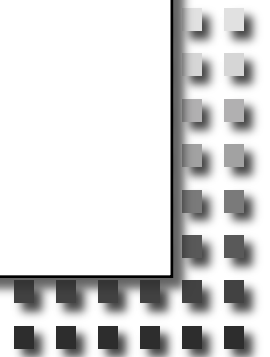
# IETF “Standards”

IETF standards not standards “because we say so”

Only standards if/when people **use** them

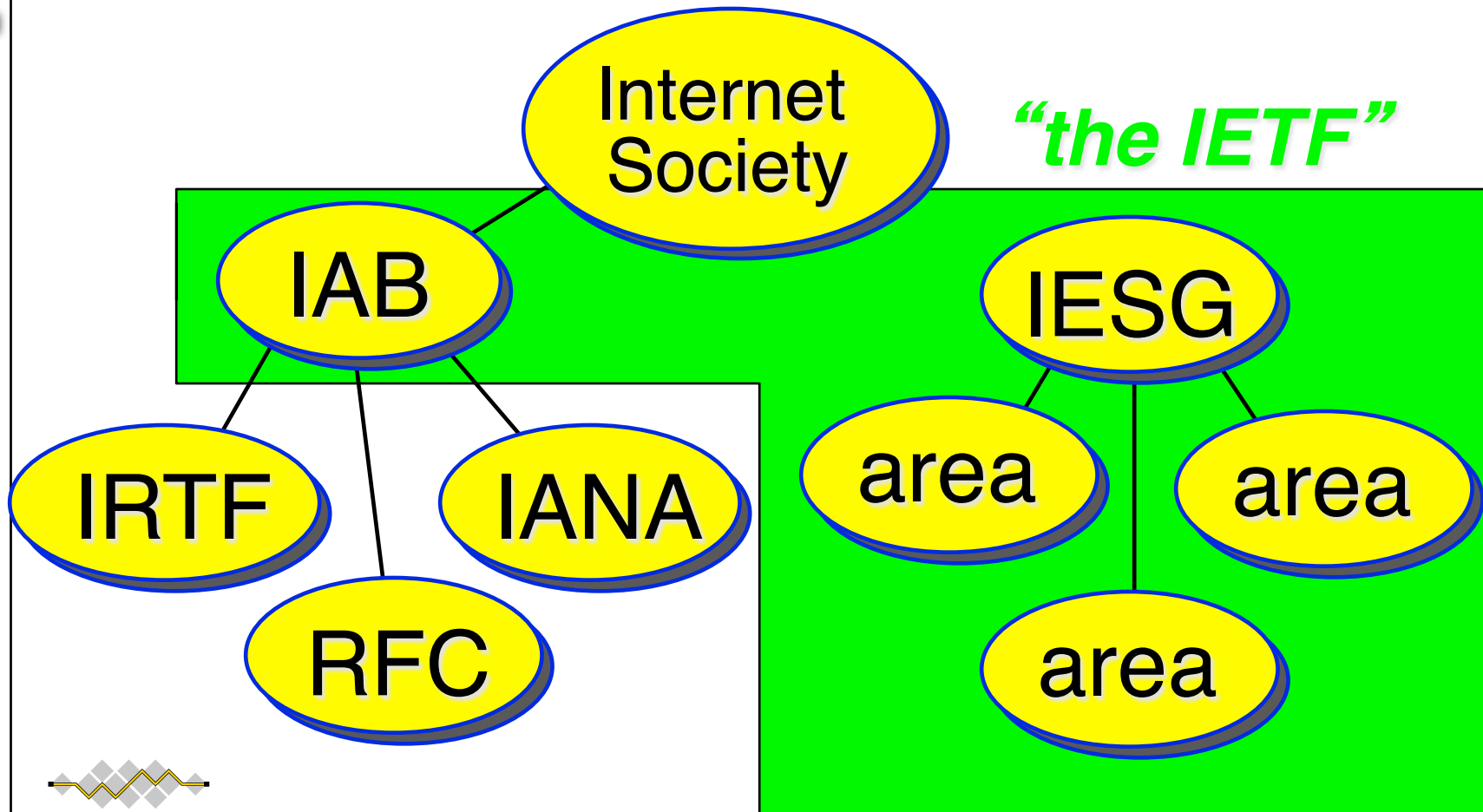
**No** formal recognition

**No** submitting to “traditional” standards bodies





# Organization of the IETF





# The Internet Society (**ISOC**)

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

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

Provides organizational home for IETF

Legal umbrella, insurance, etc.

The ISOC BoT 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

**update: taking on support of administrative functions**

**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

End-to-End

Group Security

Host Identity Protocol

Internet Measurement

IP Mobility Optimizations

Network Management

Peer-to-Peer

Routing

For more information see <http://www.irtf.org>



I E T F





# 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

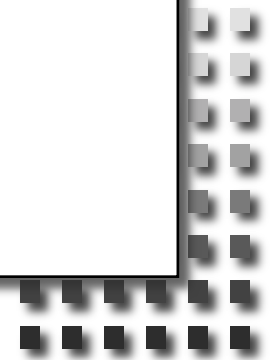
Appoints the IRTF chair

Selects the IETF-IANA

Oversees the RFC Editor

Hosts workshops

Chartered by the ISOC



# IAB Members

Bernard Aboba

Harald Alverstrand

IETF Chair

Rob Austein

Leslie Daigle

IAB chair

Patrik Fältström

Sally Floyd

Mark Handley

Bob Hinden

Geoff Huston

Jun-ichiro Itojun Hagino

Eric Rescorla

Pete Resnick

Jonathan Rosenberg





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

Assigns parameters and keeps them from colliding  
protocol numbers

IP addresses

mostly delegated to the 4 (going on 5) IP Address registries

domain names

mostly delegated to DNS name registries

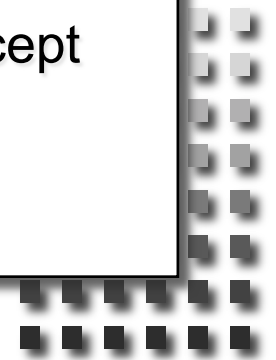
Functions split with the creation of **ICANN**

**I**nternet **C**orporation for **A**ssigned **N**ames and **N**umbers

Independent corporation to take over IANA functions

Contract with US government - lots of tussling over concept

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

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

Harald Alvestrand <harald@alvestrand.no>

also chair of the **IESG**

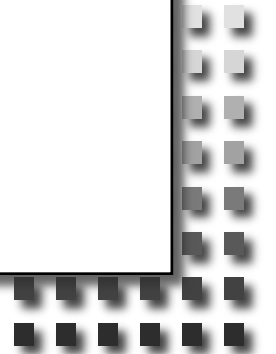
also director of the **General Area**

also ex officio member of the **IAB**

Nominated by IETF community - this includes you

Selected by nomcom

IETF's "CTO" - "Chief Talking (& Traveling)  
Officer"







# Area Directors (**ADs**)

Nominated by the community – this includes you

Selected by nomcom

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

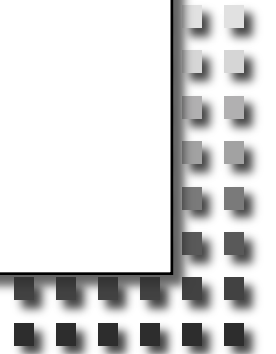
**Reviews** working group documents

Most Areas have 2 ADs

all but General Area



I E T F





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

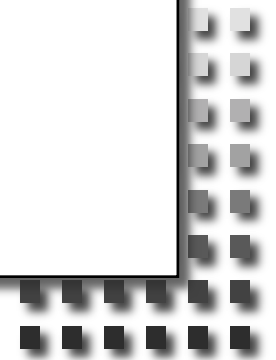
IETF Chair + rest of ADs

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 Areas

## IETF Chair & AD for General Area (gen) (4 WGs)

Harald Alvestrand <chair@ietf.org>

## Applications (app) (15 WGs)

Ted Hardie [hardie@qualcomm.com](mailto:hardie@qualcomm.com)

Scott Hollenbeck <shollenbeck@verisign.com>

## Internet (int) (20 WGs)

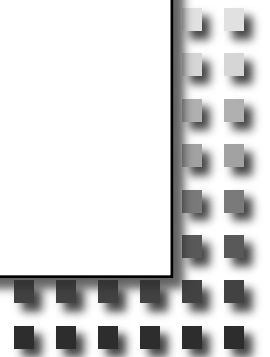
Thomas Narten <narten@us.ibm.com>

Margaret Wasserman <margaret@thingmagic.com>

## Operations & Management (ops) (25 WGs)

David Kessens <david.kessens@nokia.com>

Bert Wijnen <bwijnen@lucent.com>





# IETF Areas (cont.)

## Routing (rtg) (14 WGs)

Bill Fenner <fenner@research.att.com>

Alex Zinin <zinin@psg.com>

## Security (sec) (22 WGs)

Steve Bellovin <smb@research.att.com>

Russ Housley <housley@vigilsec.com>

## SUB-IP (sub) - Ad Hoc Area (1 WG)

Bert Wijnen <bwijnen@lucent.com>

Alex Zinin <zinin@psg.com>

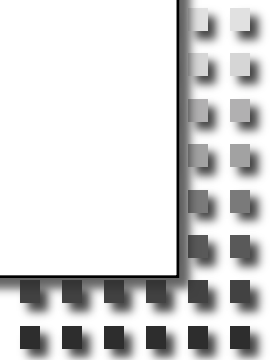
## Transport Services (tsv) (26 WGs)

Allison Mankin <mankin@psg.com>

Jon Peterson <jon.peterson@neustar.biz>



I E T F





# IETF Secretariat

## Organizes/Coordinates

plenary meetings

mailing lists hosted by IETF

Internet-Draft directory

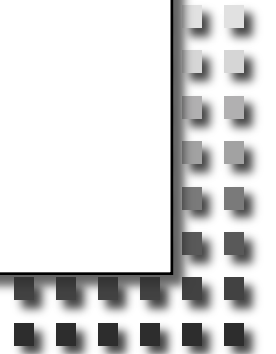
IESG teleconferences

day to day work of IESG and working groups

Currently provided by Foretec – Reston, Virginia

Funded from IETF meeting fees

Under discussion





# Selecting IETF Management

RFC 3777 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

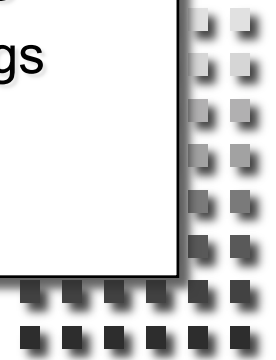
nomcom selected **randomly** from list of volunteers

volunteers have to have been at 2 of last 3 IETF meetings







**very** random selection process



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# Dots

-  IAB member (red)
-  IESG member (yellow)
-  Working Group chair (blue)
-  nomcom (orange) – they came to listen to you...
-  Local host (green)
-  People who are willing to help!



I E T F



# Working Groups

This is where the IETF primarily get its work done  
RFC 2418 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

Mailing list and face-to-face meetings

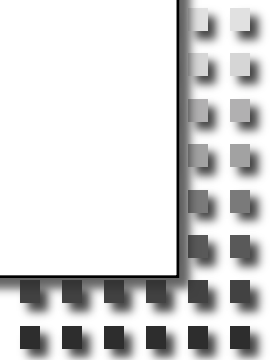
most work happens on mailing lists

all decisions must be verified on mailing list

face-to-face discussion to resolve disagreements



I E T F





# IETF Documents

All **open** - no “confidential contributions”

Developed as Internet-Drafts

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

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

## Published as RFCs

archival publications (never changed once published)

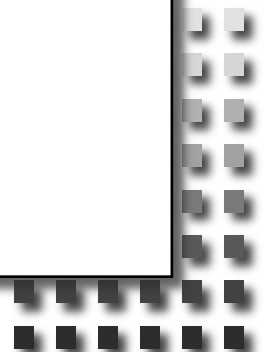
different types: (not all RFCs are standards!)

informational, experimental, BCP, standards track, historic

3-stage standards track, under review in NEWTRK

Proposed Standard, Draft Standard, Internet Standard

**Interoperability** not conformance





# What is a **RFC**?

IETF document publication series

RFC used to stand for Request for Comments

now just a name

now tend to be more formal documents than early RFCs

Now nearly 3700 RFCs

RFC 1 *Host Software* - Apr 7 1969

“**Not all** RFCs are standards”

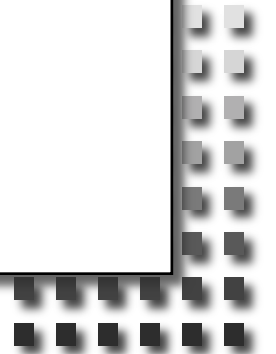
see RFC 1796

though some vendors imply otherwise

**Many** types of RFCs



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# 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 ...



I E T F

... 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





# Working Documents

## Internet-Draft

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

some RFCs created by IANA or RFC Editor - exceptions



I E T F





# 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**)

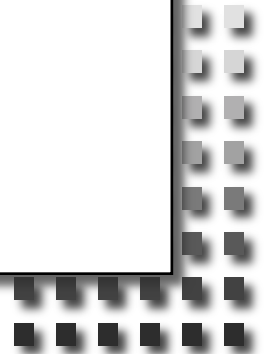
Draft Standard with wide deployment and use

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

generally policies or IETF procedures  
(best way we know how)



I E T F





# 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)

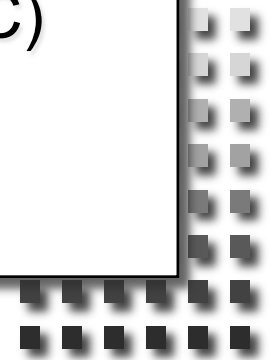
- anyone can comment

- IESG considers comments and its own review

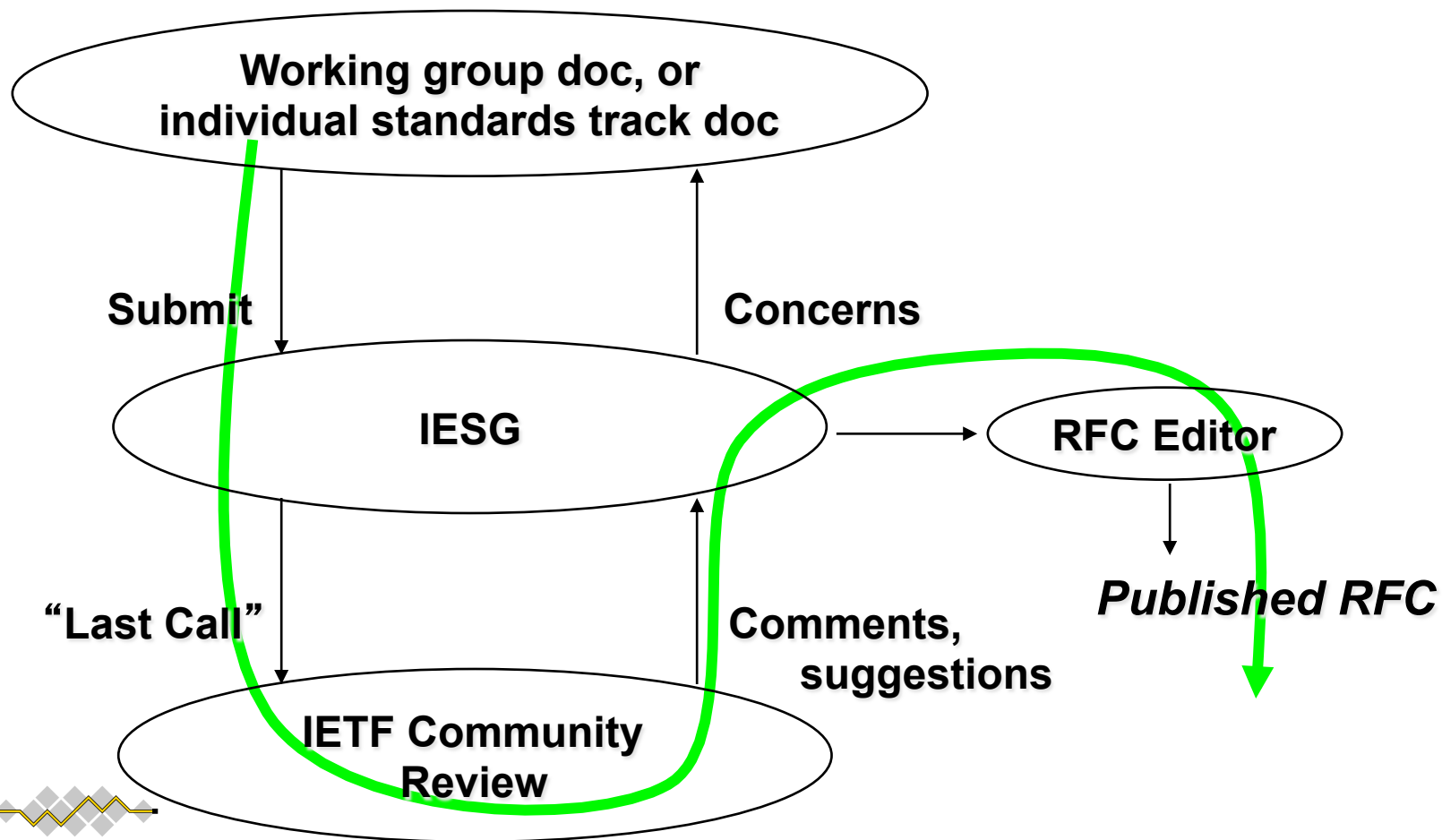
  - may approve publication as standards track RFC

  - may point out issues to working group & return ID

Similar process for non-WG drafts (with 4-week LC)

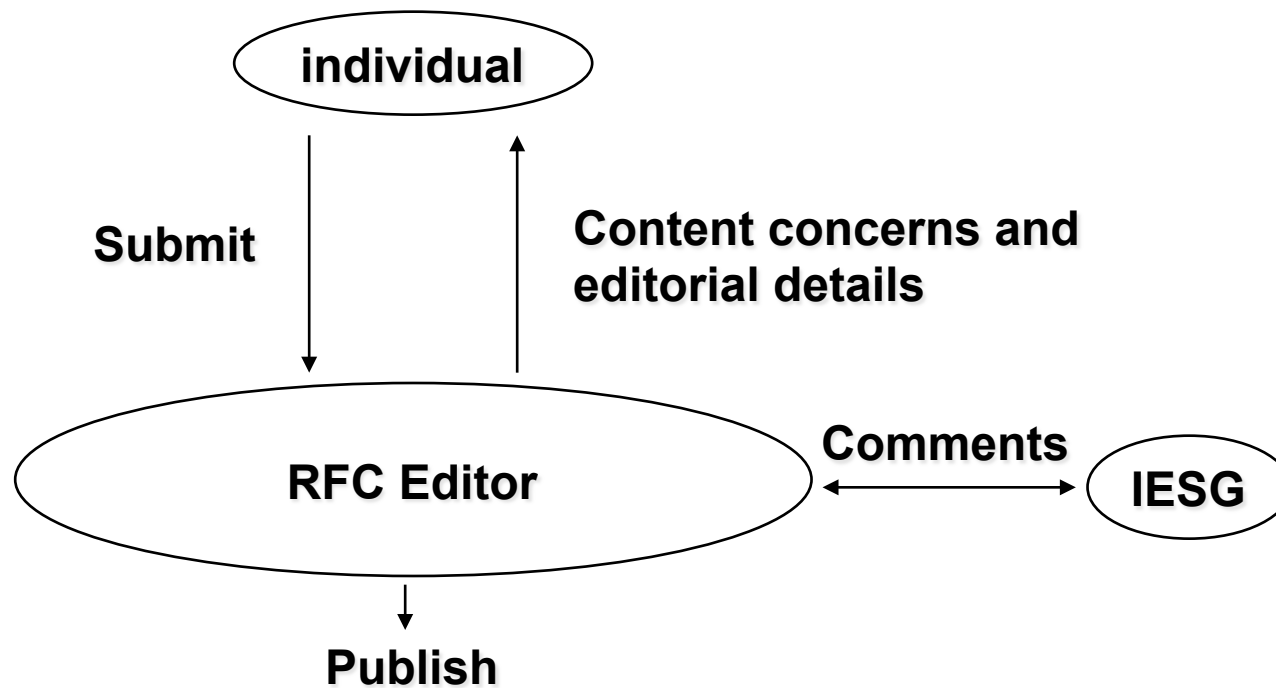


# IETF Submission

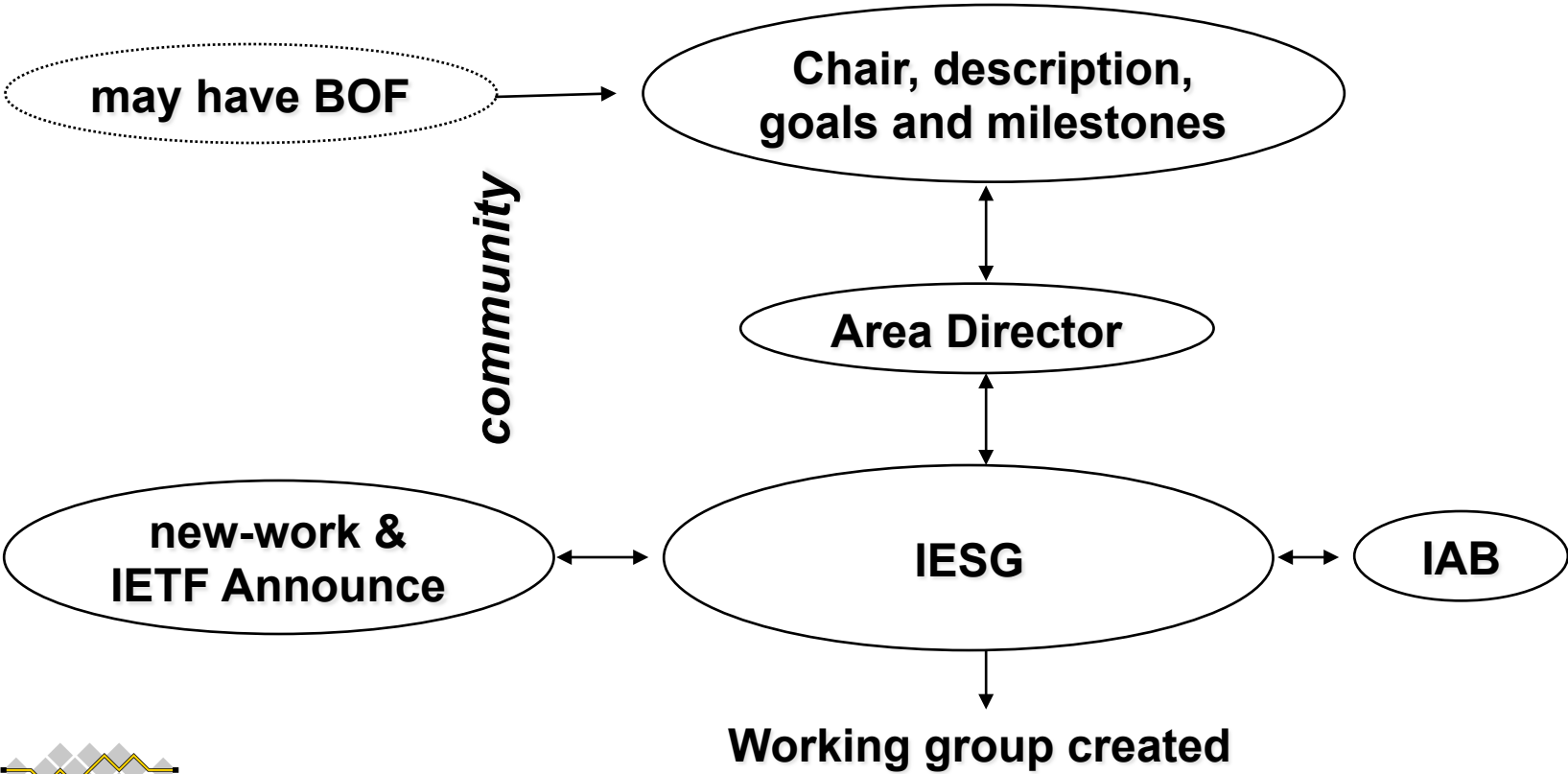




# Non-IETF Submissions



# Working Group Creation





# Appeals Process

IETF decisions can be appealed

start level above decision being appealed

1st to the WG chair(s)

Only then to the Area Director

Only then to the IESG

Only then to the IAB

If claim is that **the process** has not been followed,  
only then an appeal can be made to the ISOC Board

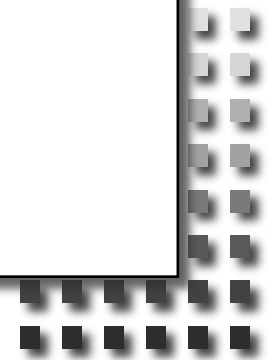
It is OK to appeal decisions – people do

but appeals are not quick

starting “low” is the right thing to do



I E T F





# IPR (Patents)

IETF IPR (patent) rules in RFC 3668

Current IETF rules

require **disclosure** of your own IPR in your own submissions & submissions of others

“**reasonably and personally**” known IPR

no patent search required

**WG** takes IPR into account when choosing technology

RFC 3669 gives background and guidance

Push from open source people for RF-only process

consensus to not change to mandatory RF-only

but many WGs **tend** to want RF or IPR-free



# IPR (Copyright)

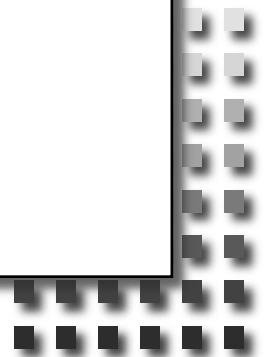
Author(s) need to give publication rights to the ISOC (IETF) if document is to be published at all even as an Internet-Draft

But **authors retain** most rights

Mandatory ID statements

- 1/ agreement that IPR disclosures have been (or will be) made
- 2/ (optional) no right to produce derivative works
- 3/ (optional) just publish as ID
- 4/ Copyright statement

Standards track requires IETF change control  
no derivative works restrictions





# Note Well (1)

The “Note Well” statement shows up a lot at the IETF.  
Mailing lists, registration, meeting openings, etc.

**“Any submission to the IETF intended by the Contributor for publication as all or part of an IETF Internet-Draft or RFC and any statement made within the context of an IETF activity is considered an "IETF Contribution".**

*continued ...*

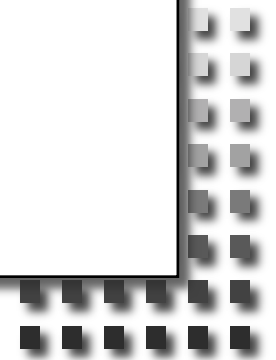


## Note Well (2)

**“Such statements include oral statements in IETF sessions, 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”**

*continued ...*



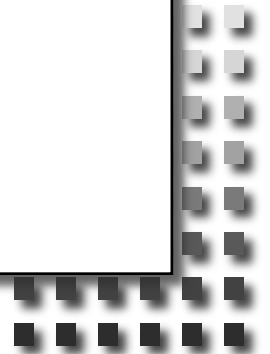


# Note Well (3)

**“All IETF Contributions are subject to the rules of RFC 3667 and RFC 3668.**

**Statements made outside of an IETF session, mailing list or other function, that are clearly not intended to be input to an IETF activity, group or function, are not IETF Contributions in the context of this notice.**

**Please consult RFC 3667 for details.”**







# Other IETF Training/Tutorials

*Provided by EDU-Team at each IETF*

*see details at <http://edu.ietf.org>*

*1300 -1500 Editor's Training*

*1500 -1700 Intro WG Chairs Training*

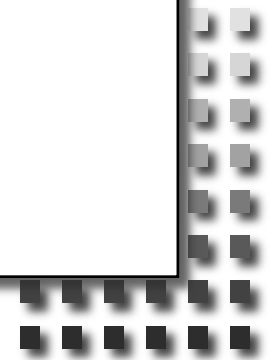
*1500 -1700 Security Tutorial*

*1700 -1900 Welcome Reception*

*(talking to IETF people is always an education!)*



**I E T F**



# What next?

*Join mailing lists*

*This is where the work happens*

*Read the drafts*

*Don't be shy*

*Talk to people*

*Look for common ground*

*Help people*

*Don't settle for settle for second-rate*



**I E T F**

# Questions?



**I E T F**