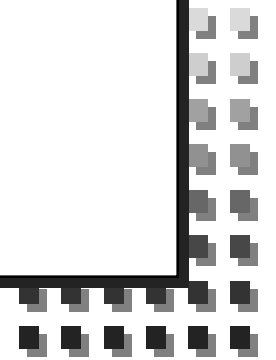




IETF Structure and Internet Standards Process

***Scott Bradner
62nd IETF
Minneapolis, MN***





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

124ish **working groups** (where real work happens)

If it matters to the Internet, it matters to us

7 **areas** (for organizational convenience)

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

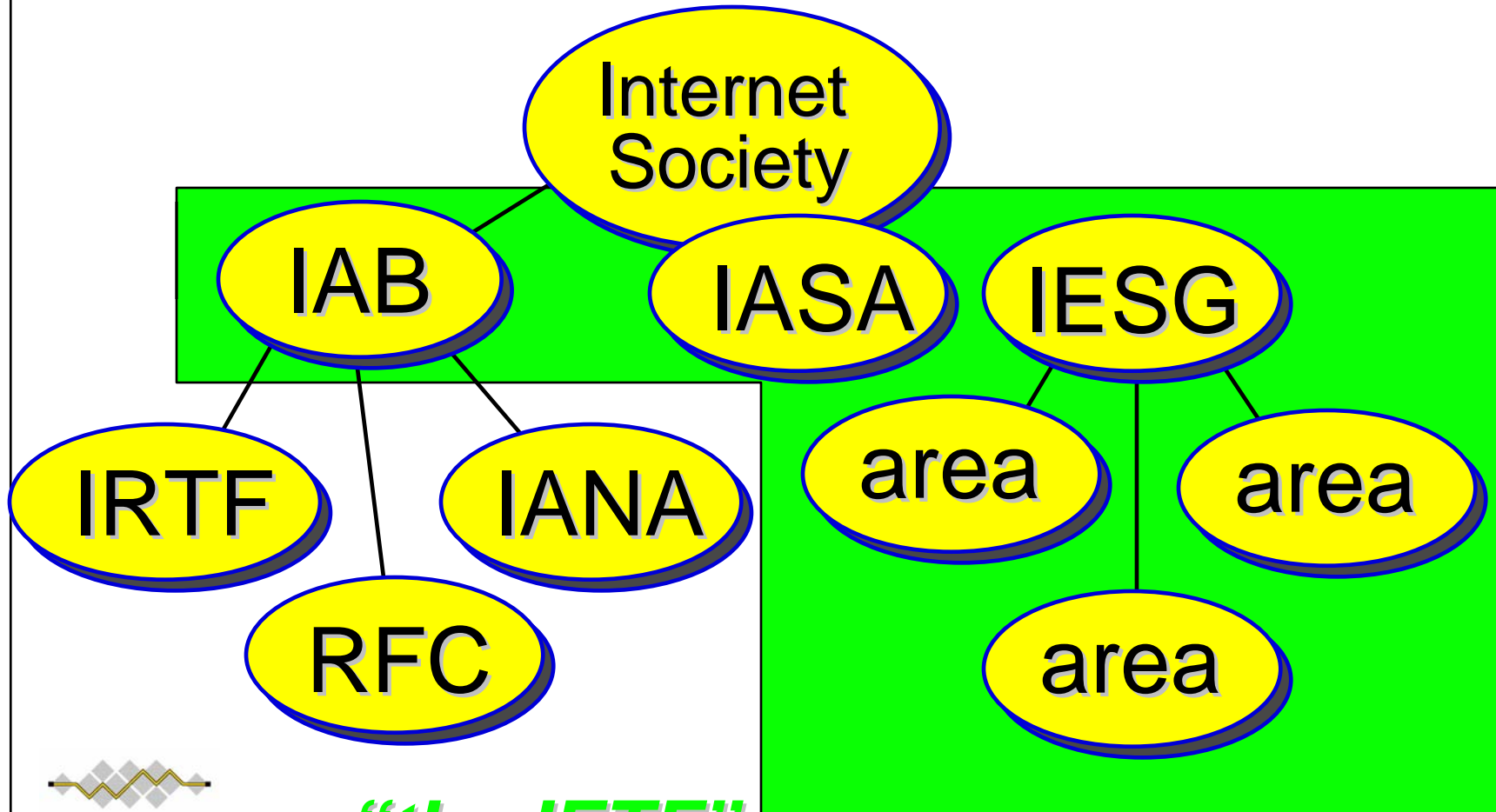
Management: **IESG** (ADs, chosen by community)

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

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



Organization of the IETF



“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 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

join at www.isoc.org



I E T F





Internet Research Task Force (IRTF)

Focused on **long term** problems in Internet

Anti-Spam

Crypto Forum

Delay-Tolerant Networking

End-to-End

Host Identity Protocol

Internet Measurement

IP Mobility Optimizations

Network Management

Peer-to-Peer

Routing

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

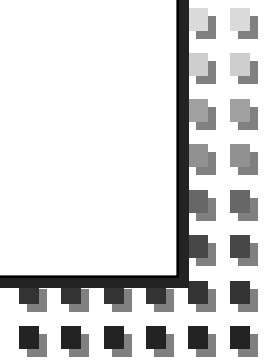
Appoints the IRTF chair

Selects the IETF-IANA

Oversees the RFC Editor

Hosts workshops

Chartered by the ISOC





IAB Members

Bernard Aboba

Loa Andersson

Brian Carpenter

(new IETF Chair)

Leslie Daigle

(current IAB chair)

Patrik Fältström

Kurtis Lindqvist

Bob Hinden

Dave Meyer

Eric Rescorla

Pekka Nikander

Pete Resnick

Jonathan Rosenberg

Lixia Zhang





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

deals with top level domains (TLDs)

rest delegated to DNS name registries

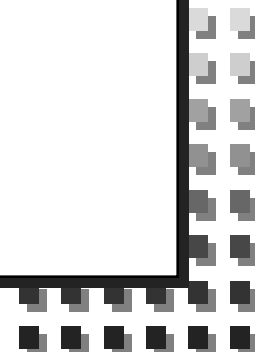
Functions split with the creation of **ICANN**

Internet **C**orporation for **A**ssigned **N**ames and **N**umbers

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 info and 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

Brian Carpenter <chair@ietf.org>

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"





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





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

IETF Areas

IETF Chair & AD for General Area (**gen**) (3 WGs)

Brian Carpenter <chair@ietf.org>

Applications (**app**) (14 WGs)

Ted Hardie <hardie@qualcomm.com>

Scott Hollenbeck <sah@428cobrajnet.ne>

Internet (**int**) (21 WGs)

Mark Townsley <townsley@cisco.com>

Margaret Wasserman <margaret@thingmagic.com>

Operations & Management (**ops**) (23 WGs)

David Kessens <david.kessens@nokia.com>

Bert Wijnen <bwijnen@lucent.com>



I E T F



IETF Areas (cont.)

Routing (**rtg**) (14 WGs)

Bill Fenner <fenner@research.att.com>

Alex Zinin <zinin@psg.com>

Security (**sec**) (22 WGs)

Sam Hartman <hartmans-ietf@mit.edu>

Russ Housley <housley@vigilsec.com>

Transport Services (**tsv**) (27 WGs)

Allison Mankin mankin@psg.com

Jon Peterson <jon.peterson@neustar.biz>



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

Will be changing

Funded from IETF meeting fees & (soon) ISOC





IETF Administrative Support Activity (IASA)

Provides the administrative structure required to support the IETF standards process

Housed within the Internet Society

creates budget for IETF

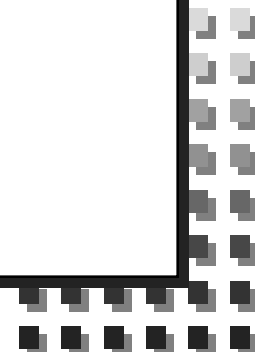
money from meeting fees & ISOC

responsible for IETF finances

contracts for IETF support functions

Secretariat functions, RFC Editor & IETF-IANA

deals with IETF IPR





IASA (continued)

Includes

- IETF Administrative Director (**IAD**)

 - ISOC employee

 - day to day operations oversight

- IETF Administrative Oversight Committee (**IAOC**)

 - 8-member body - IAB & IETF chairs & ISOC prez plus members selected by nomcom, IAB, IESG & ISOC

 - IASA oversight



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 3 of last 5 IETF meetings








I E T F

very random selection process



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

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

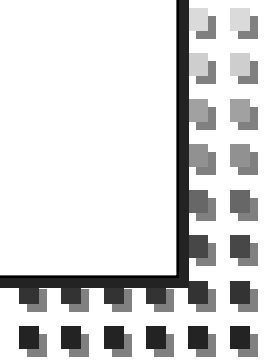
most work happens on mailing lists

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)

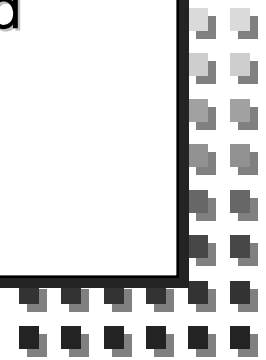
different types: (not all RFCs are standards!)

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





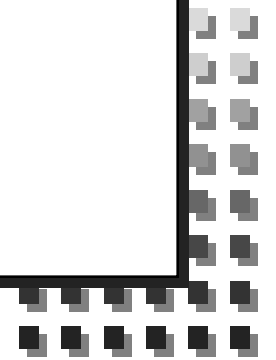
IETF “Standards”

IETF standards not standards “because we say so”

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

No formal recognition

No submitting to “traditional” standards bodies





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

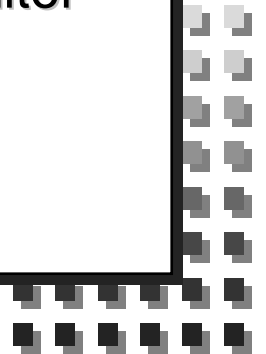
anyone can submit an ID

zapped from IETF directory after 6 months

but many mirrors exist

almost all RFCs must pre-exist as IDs

exceptions: some RFCs created by IANA or RFC Editor





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





Internet Standards Documentation (ISDs)

New concept about to be approved in the newtrk WG
does not replace RFCs

Meta document (XML is definitive version)

Contains list of documents that make up a standard

e.g. a TCP ISD would list many RFCs

with comments (e.g., RFC 43 updates section 2.3 of RFC 23)

documents do not all need to be RFCs

Contains date stamps

so it can be determined what a standard was on a



I E T F

particular date





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

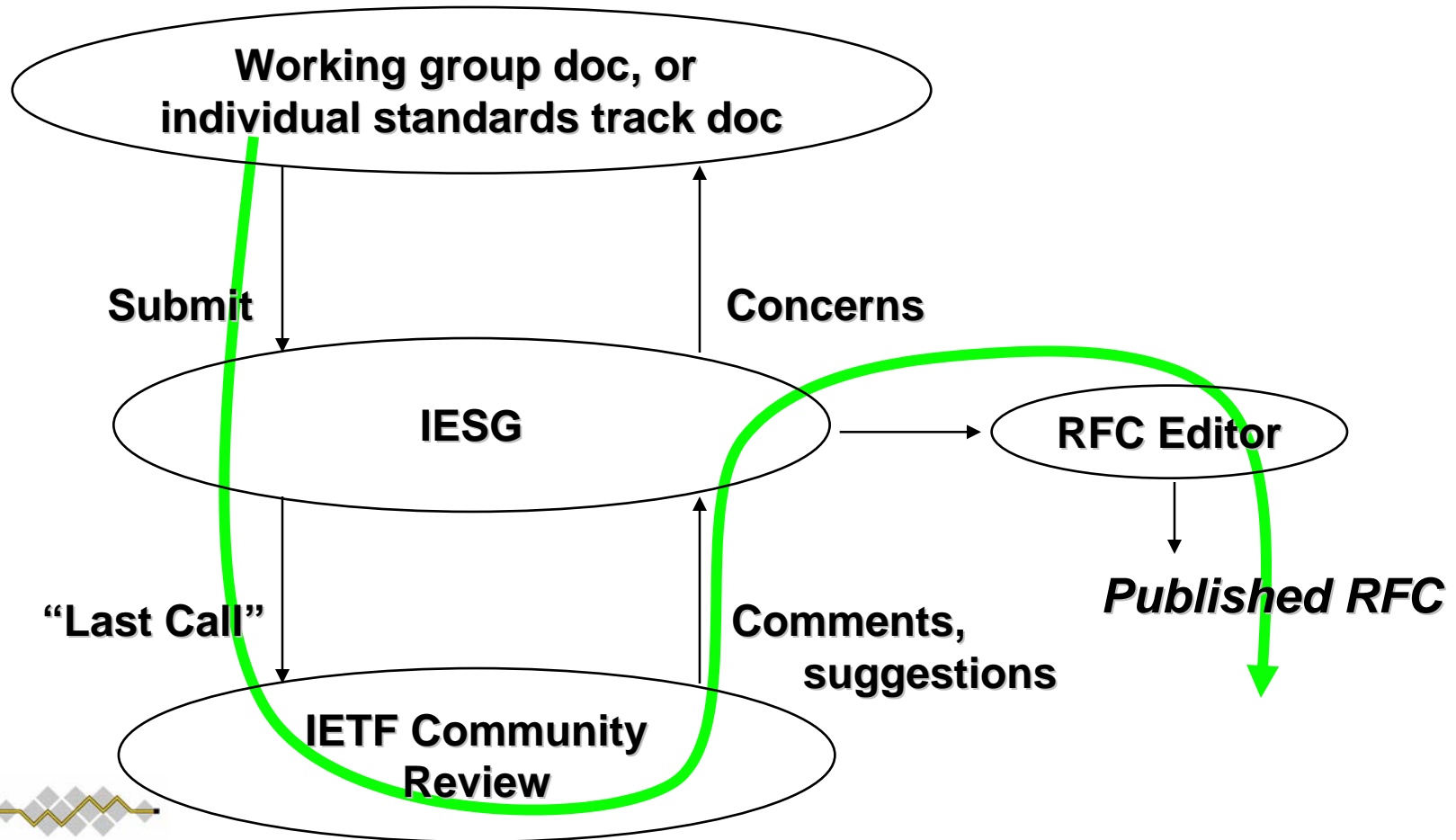
 - may approve publication as standards track RFC

 - may point out issues to working group & return ID

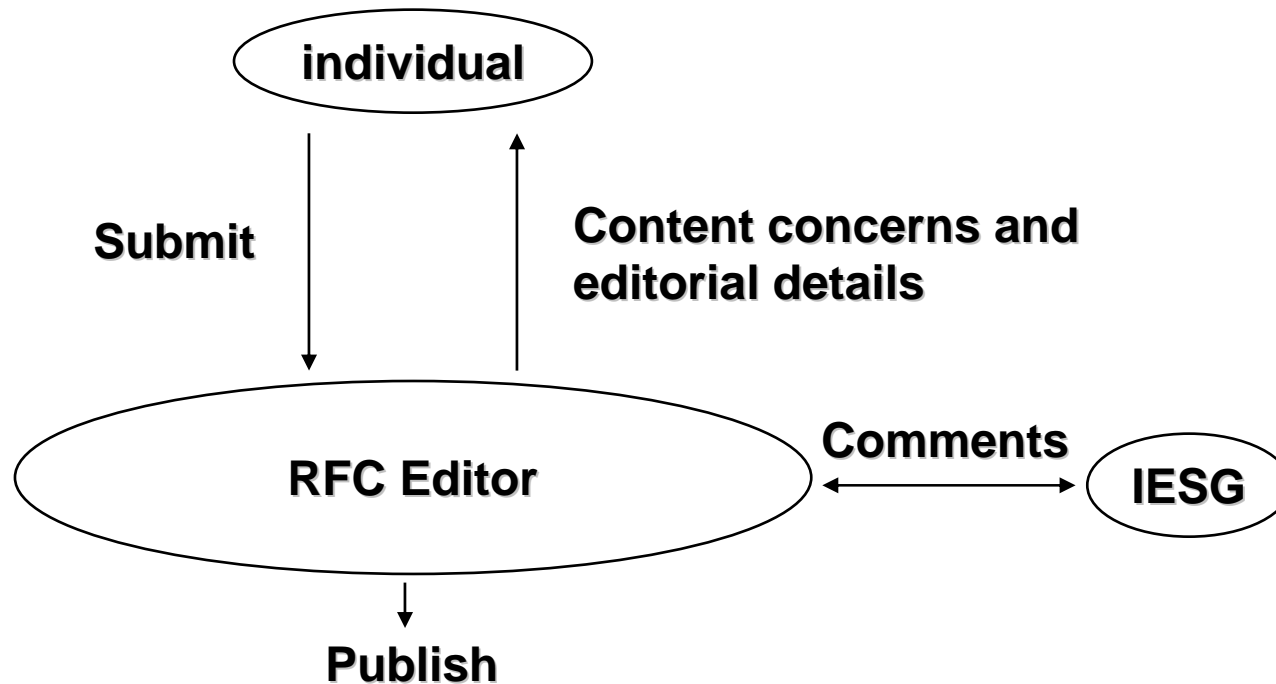
Same process for ISDs

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

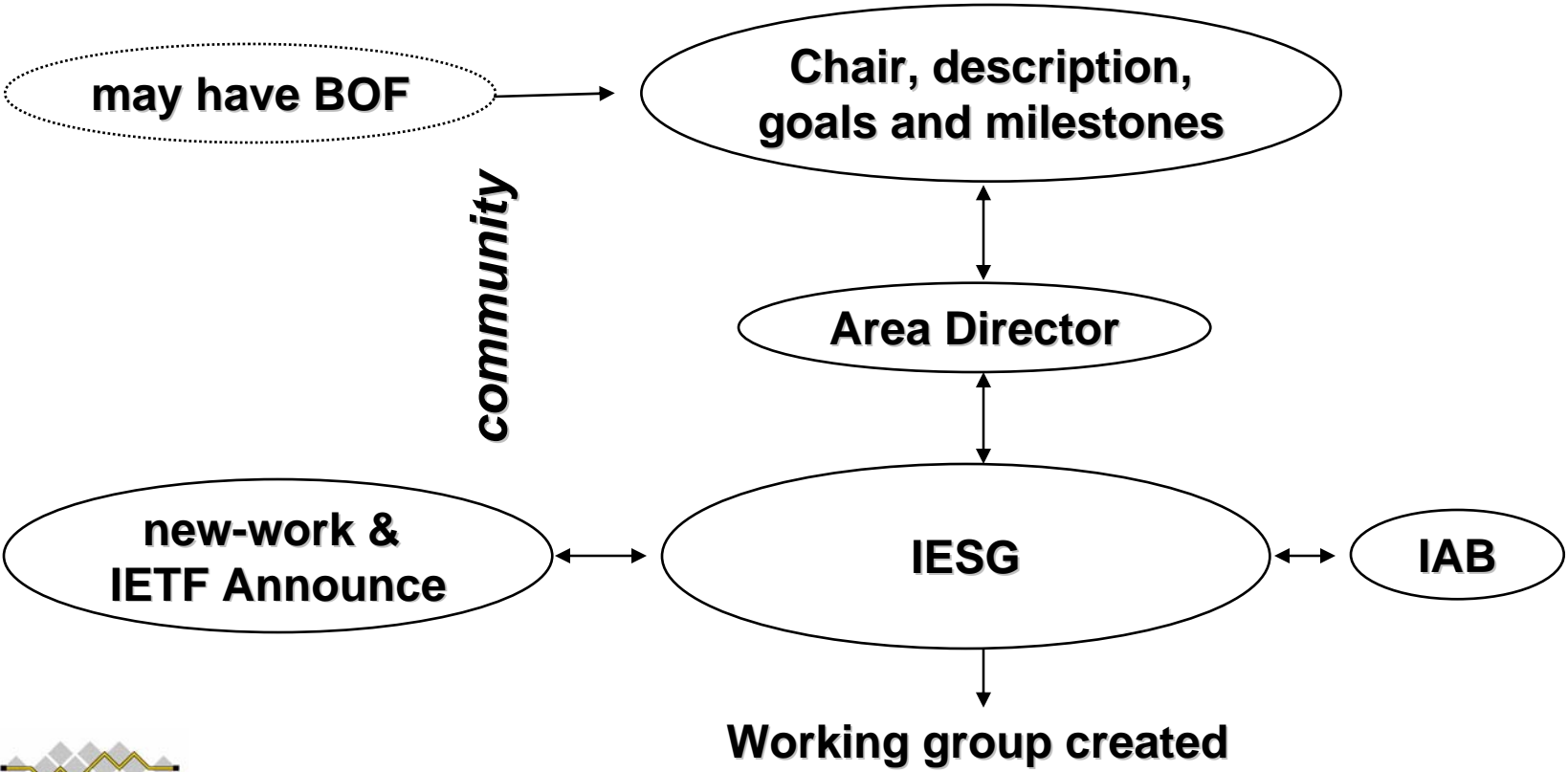
IETF Submission



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

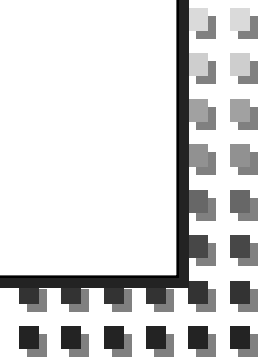
If claim is that **the process** has not been followed,
only then an appeal can be made to the ISOC Board

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

i.e., 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



I E T F



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

ID notices:

- 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

i.e., no derivative works restrictions



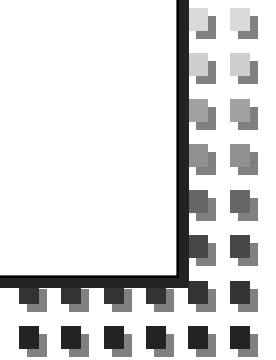


Note Well (1)

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 ...



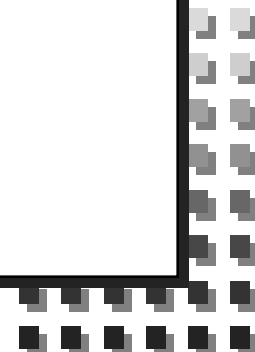


Note Well (3)

“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

1300 -1500 Working Group Leadership - Salon F

1500 -1700 Routing, Bridging and Switching - Salon G

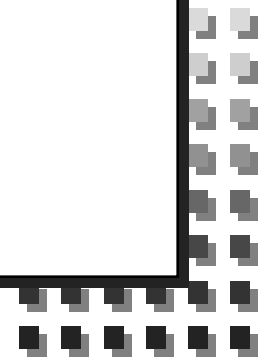
1500 -1700 How to Write an RFC - Salon E

1700 -1900 Welcome Reception - Salon D

(talking to IETF people is often 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