

# Internet's "Technical" Governance

IETF, Its Working and Related  
Entities

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*Ack: Based on presentations by Olaf Kolkman and Scott Bradner*

# Our Over-ambitious Goal?

- Understand the issues that arise



- When we unplug the wire and go wireless

- When we move and require connectivity with mobility

- And how to handle these issues

- Build a mobile data network which

- Can grow to global proportions <mobility>

- Support diverse applications <architecture>



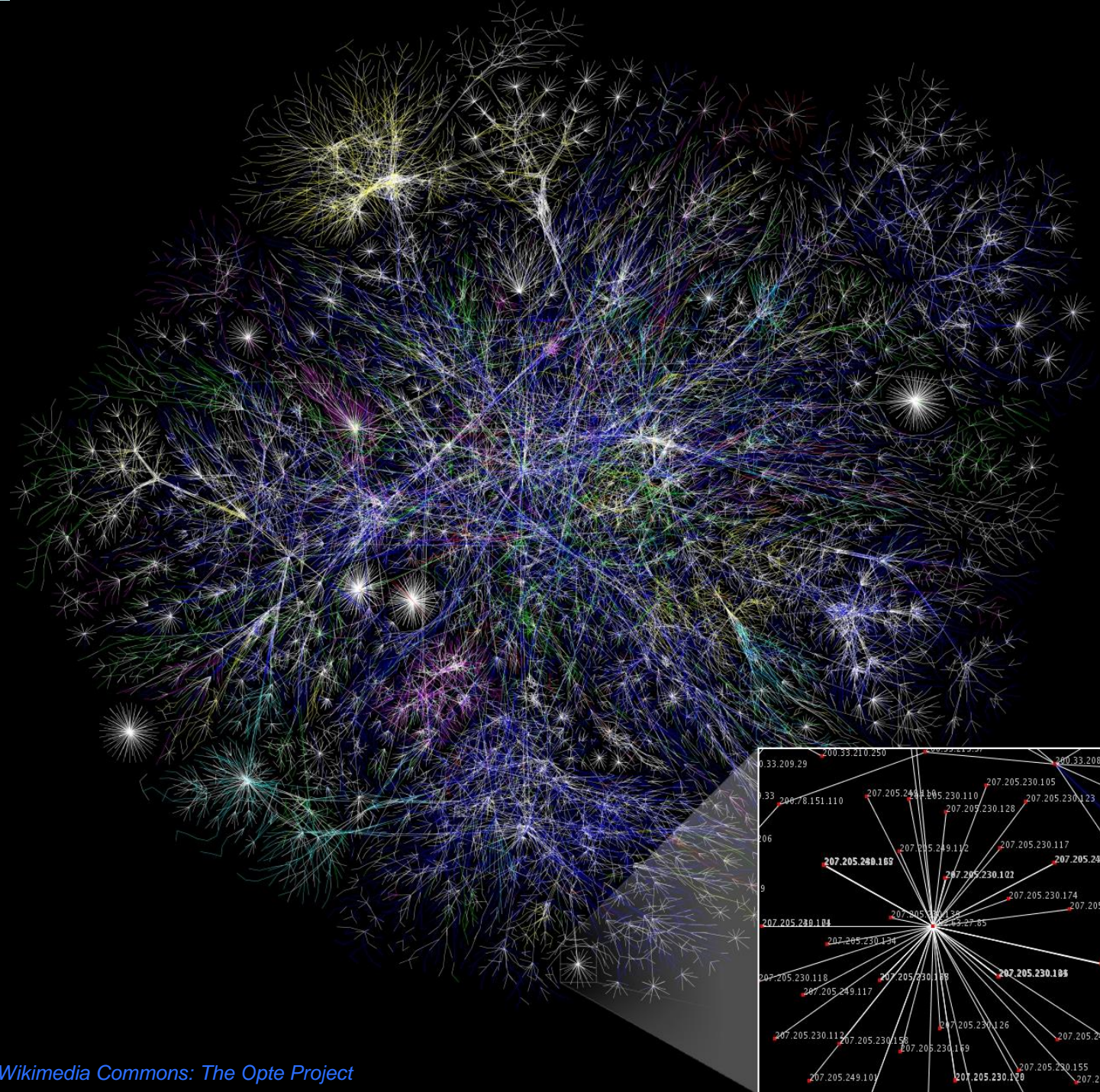


Image from Wikimedia Commons: The Opte Project

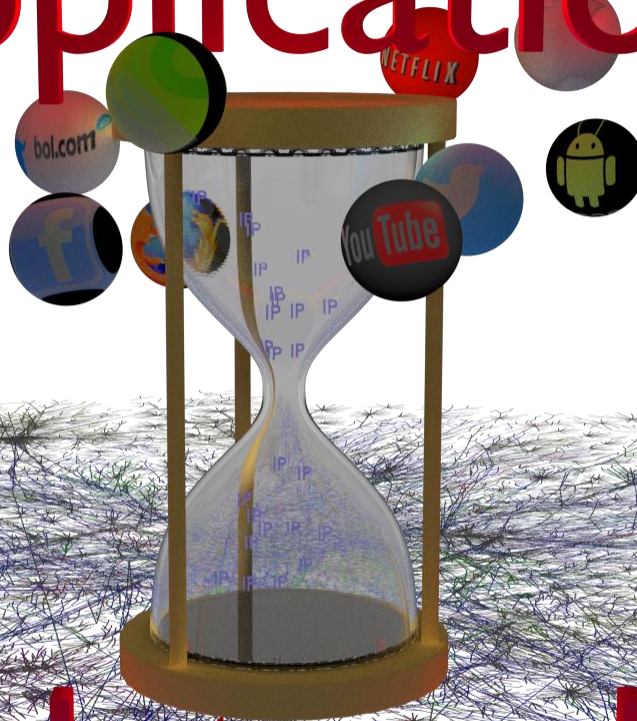


# Services Provided by Internet

- Shared access to computing resources
  - Telnet (1970's)
- Shared access to data/files
  - FTP, NFS, AFS (1980's)
- Communication medium for people to interact
  - Email (1980's), on-line chat rooms (1990's)
  - Instant messaging, IP Telephony (2000's)
- A medium for information dissemination
  - USENET (1980's), WWW (1990's)
    - Replacing newspaper, magazine?
  - Audio, video (2000's)
    - Replacing radio, CD, TV...

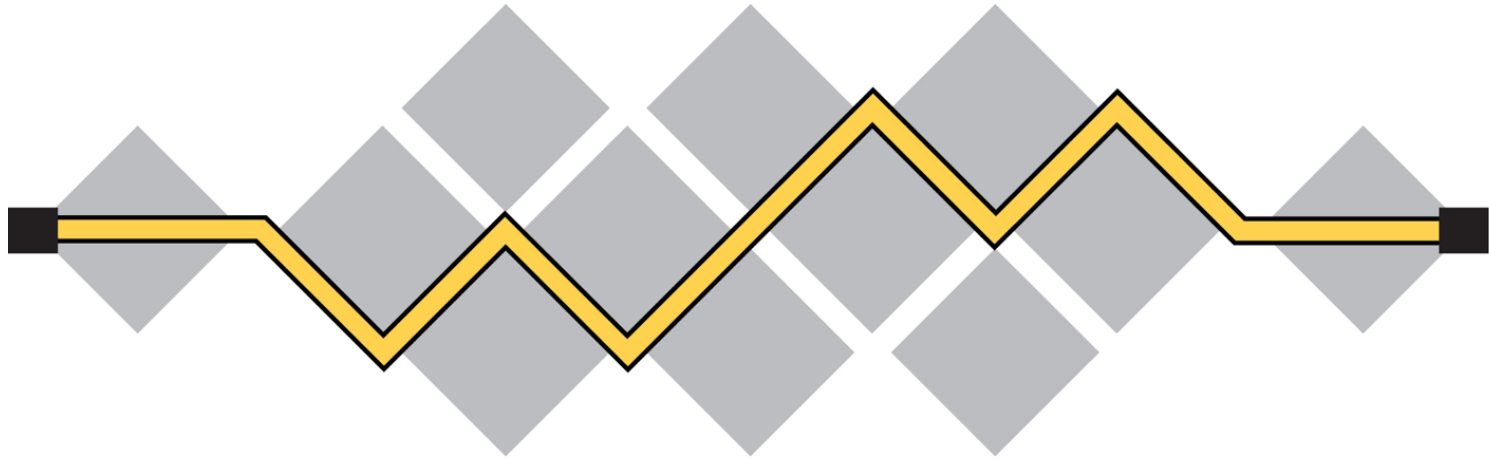


# Applications



# Network

## *Internet standards R us*



**I E T F<sup>®</sup>**

- **Does not exist (in legal sense)**
  - **No members, no voting, ~2K people in 3 meetings/year, lists ...**
- **People not companies**
  - ***“We reject kings, presidents and voting. We believe in rough consensus and running code”***



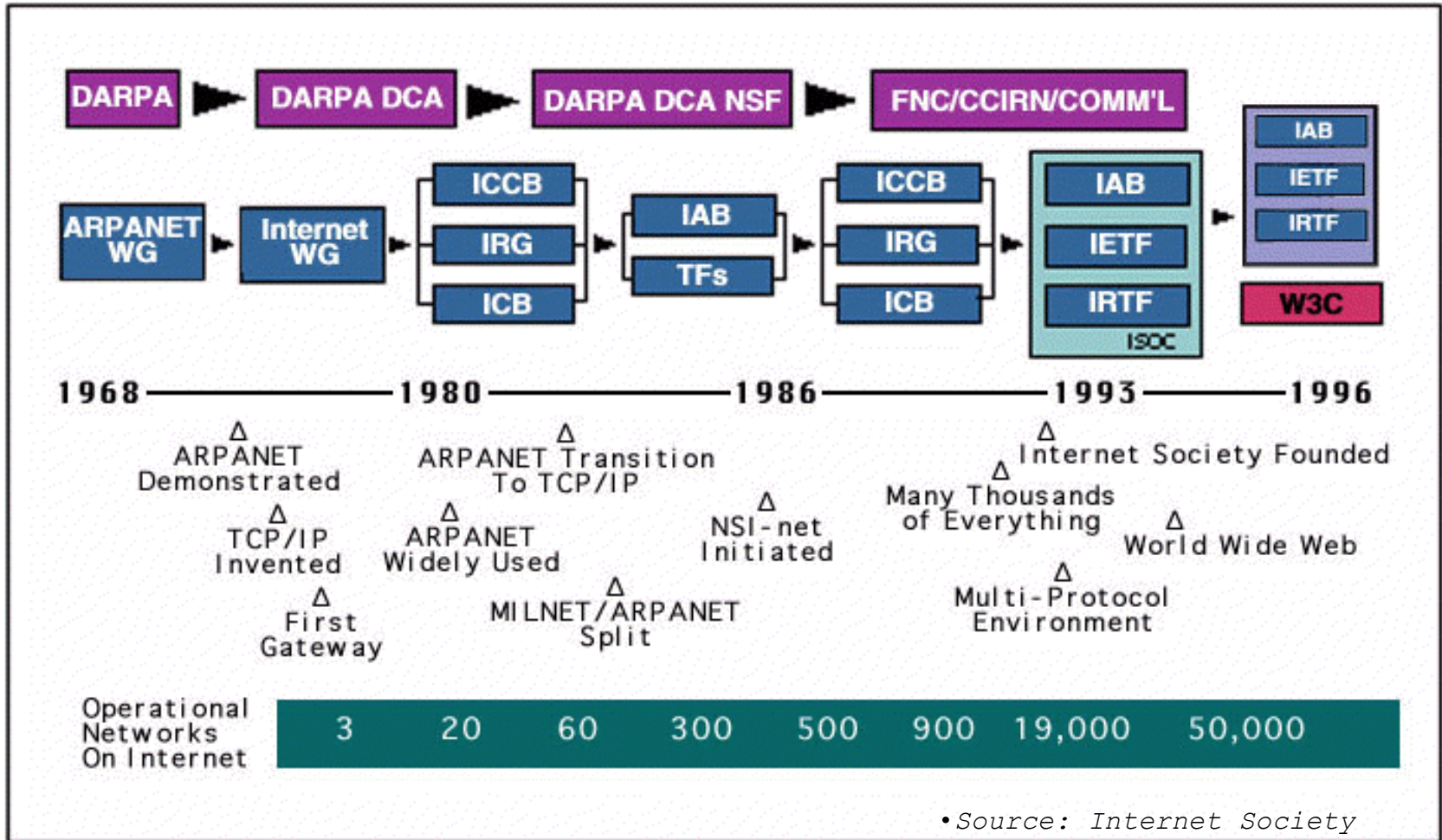
- The Internet Engineering Task Force is a loosely self-organized group of **people** who contribute to the engineering and evolution of Internet technologies. It is the principal body engaged in the **development** of new Internet **standard specifications**.

.... RFC4677

- The mission of the IETF is to **make the Internet work better** by producing **high quality, relevant technical documents** that influence the way people **design, use, and manage** the Internet.

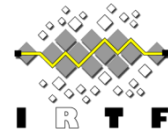


# Time Line of the Internet



Speed:	56 kbps	1.5 Mbps	45 Mbps	NSF dismantled
Nodes:	<100 nodes	10,000	100,000	16 mid-level networks

# IETF Universe



RFC Editor

IETF Secretariat



## IESG

IASA

IAD

IAOC

IETF Trust

Area

Area

Area

Area

Area

Area

working group

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**INT**

About Packets

**RTG**

About creating the paths for the packets

**OPS**

About managing the networks

**TSV**

About the use of the paths to provide the end-to-end experience

**SEC**

About Security Protocols (cross area)

**APS**

About Application Protocols used on the Internet

**RAI**

About Real Time Applications



# IESG

## Applications Area

P. Resnick  
P. Leiba

appsawg  
core  
httpbis  
hybi  
jcardcal  
paws  
precis  
repute  
scim  
spfbis  
urnbis  
websec  
weirds

## Transport Area

M. Stiemering

alto  
behave  
cdni  
ippm  
mptcp  
nsfv4  
ppsp  
rmcat  
rmt  
storm  
tcpm  
tsvwg

## Security Area

S. Turner  
S. Farrell

abfab  
dane  
emu  
ipsecme  
jose  
kitten  
mile  
nea  
oauth  
pkix  
tls

## Routing Area

S. Bryant  
A. Farrell

bfd  
ccamp  
forces  
i2rs  
idr  
isis  
karp  
l2vpn  
l3vpn  
manet  
mpls  
nvo3  
ospf  
pce  
pim  
pwe3  
roll  
rtwg  
sidr

## O&M Area

B. Claise  
J. Jaeggli

6renum  
adslmib  
bmwg  
dime  
dnsop  
eman  
grow  
ipfix  
mboned  
netconf  
netmod  
opsawg  
opsec  
v6ops  
wkops

## RAI Area

G. Gamarillo  
R. Barnes

avtcore  
avtext  
bfcpbis  
clue  
codec  
cuss  
dispatch  
drinks  
ecrit  
geopriv  
insipid  
mediactrl  
mmusic  
p2psip  
payload  
rtcweb  
salud  
siprec  
soc  
straw  
viper  
xmpp  
xrblock

## Internet Area

B. Haberman  
T. Lemmon

6lowpan  
6man  
anccp  
dhc  
dmm  
dnext  
hip  
homenet  
intarea  
l2tpext  
lisp  
lwig  
mif  
mip-4  
multimob  
netext  
ntp  
pcp  
pppext  
savi  
software  
sunset4  
tictoc  
trill

## GENERAL AREA

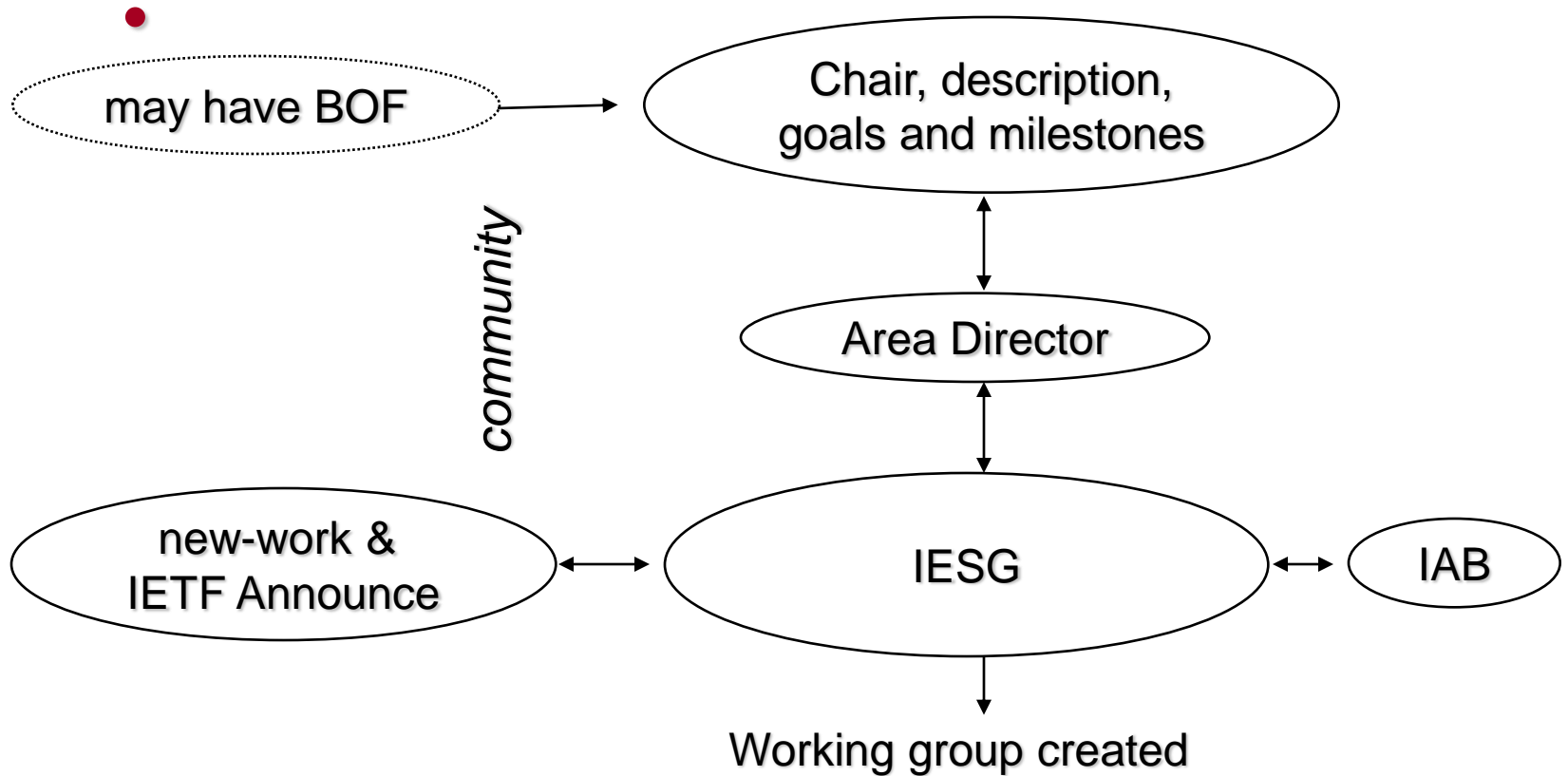
J. Arko

Snapshot end 2014

# Working Groups

- Where the IETF primarily get its work done
  - Most discussions on WG mailing list
    - Face-to-face meetings focused on key issues
- No defined membership
  - Just participants
- “*Rough consensus and running code...*”
  - No formal voting - can not define constituency
    - Can do show of hands or hum - but no count
- WGs focused by charters agreed between chair and AD
  - Restrictive charters with milestones, approved by IESG with IAB advice
- WGs are closed when their work is done

# Working Group Creation



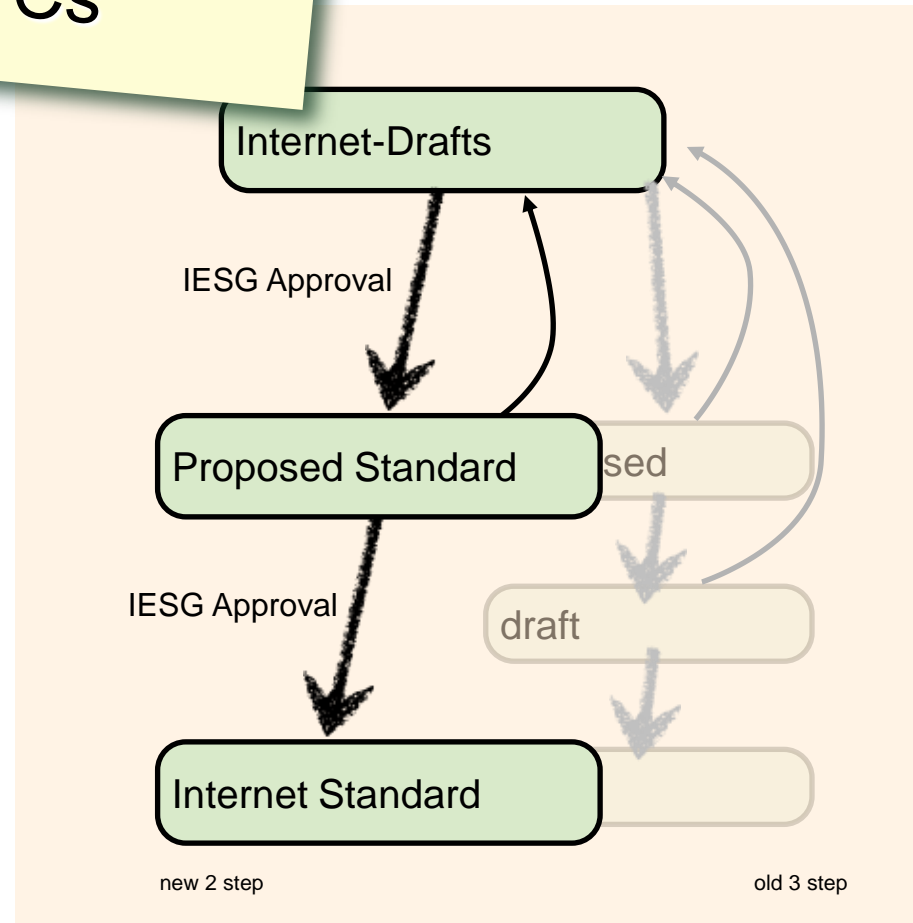


# Role & Scope of IETF

- “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
  - Constant exploration of edges

# IETF Standards and RFCs

- IETF standards are published as RFCs
  - Standards track
  - Best Current Practices (operational)
  - Informational and Experimental
- RFC series also includes
  - IRTF (Internet Research Task Force)
  - IAB (Internet Architecture Board)
  - Independent contributions
- Standards Track documents are maintained by the IETF
- IESG approval: based on consensus process



Not all RFCs are IETF standards

# IETF “Standards”

- IETF standards: not standards “because we say so”
- Standards only when people use them
  - formal SDOs can create legally mandated standards
- No formal recognition for IETF standards
  - By governments or “approved” standards organization
  - Lack of formal government input “a problem” (at least to some governments!)
- No submitting to “traditional” bodies



# The Internet Society (ISOC)

Organizational and  
administrative home  
for IETF

Legal umbrella,  
IASA home, IAD  
employer, etc.



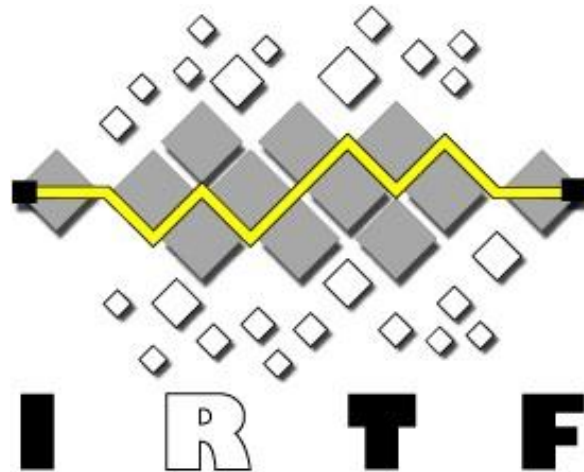
IAB chartered  
by ISOC

IETF (through IAB)  
appoints 3 ISOC  
trustees

# Internet Research Task Force (IRTF)

Focused on **long term** problems in Internet

A number of Research Groups (RG)



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

Most groups are open, some invitation only

# Internet Architecture Board (IAB)

Chartered by the  
ISOC

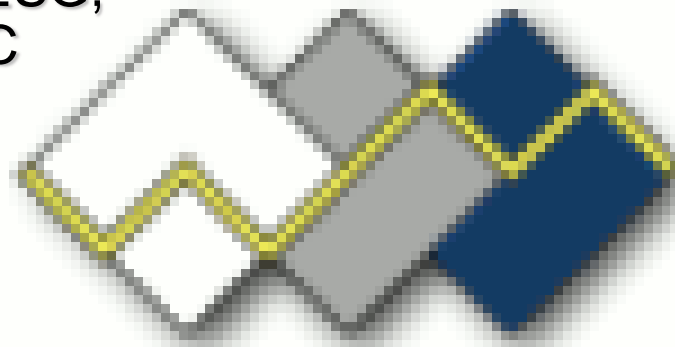
Provides overall  
**architectural advice**  
& **oversight** to IESG,  
IETF & ISOC

Provides “oversight”  
of IETF standards  
process

Deals with IETF  
external liaisons

Selects  
IETF - IANA

for more  
information see  
<http://www.iab.org>



**I A B**

Appoints &  
oversees RFC  
Editor + IRTF Chair

A step in appeals  
chain

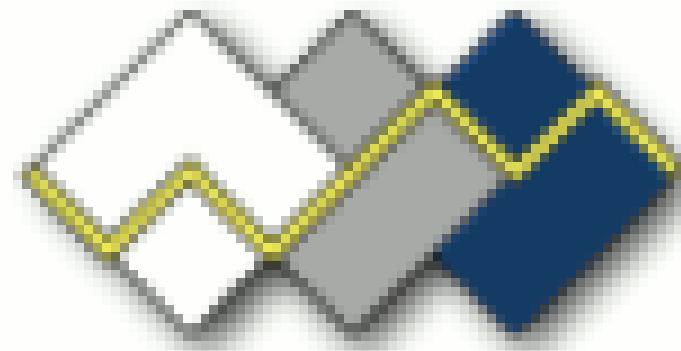
# IAB Oversight Mechanisms

Provide input to  
IESG on WG  
formation & charters

Organize ad-hoc  
expert groups to  
adjudicate  
technical disputes

Sponsor & organize  
IRTF

Review BOFs



**I A B**

Convene topic-  
specific workshops

Write IDs/RFCs  
stating IAB opinion

Participate in WG  
discussions



# Internet Assigned Number Authority (IANA)

Assigns numbers  
and keeps them from  
colliding

Functions split  
from IETF with the  
creation of ICANN

IETF-IANA



Internet Assigned Numbers Authority

Non-IETF-IANA

Protocol numbers &  
parameters (ports,  
MIME types, etc)

IP addresses and  
domain names

# Internet Engineering Steering Group (IESG)

Process  
management and  
RFC approval body

Area Directors  
(ADs) + IETF Chair

Approves WG  
creation (with IAB  
advice)



Provides technical  
review & approves  
publication of IETF  
documents

Multi-disciplinary  
technical review  
group

Reviews and  
comments on non-  
IETF submissions

# IETF Administrative Support Activity (IASA)

Administrative structure to support IETF standards process

Housed within the Internet Society

Responsible for IETF finances

Has no authority over the standards process



Contracts for support functions (Secretariat, RFC Editor & IETF-IANA)

Deals with IETF IPR

Includes IETF Administrative Director (IAD)

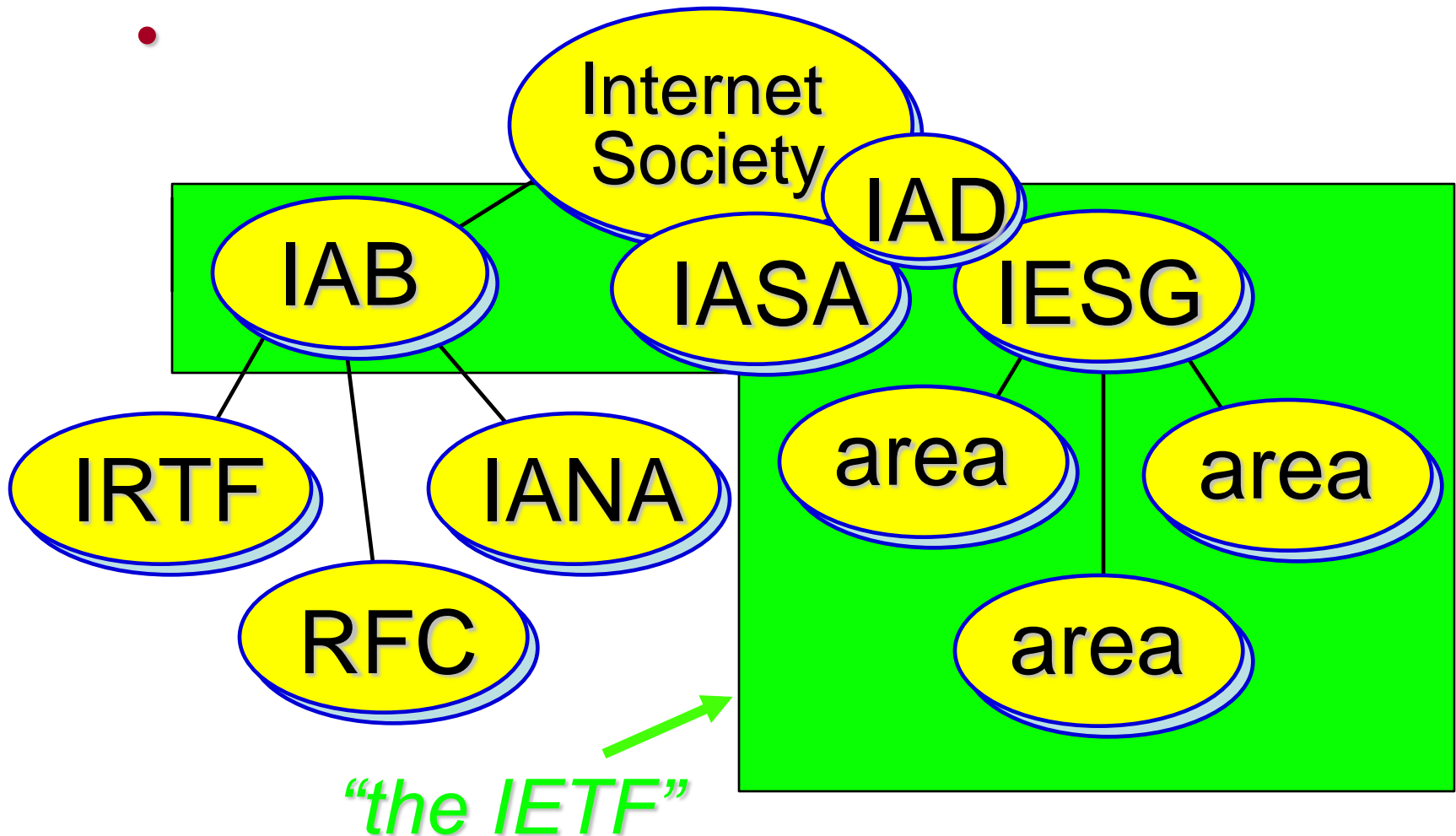
Includes 8-member IETF Administrative Oversight Committee (IAOC)

# IAOC Membership

- Bob Hinden, appointed by the **IAB**
- Kurtis Lindqvist, appointed by the **IESG** (IAOC Chair)
- Fred Baker, appointed by the **ISOC** Board of Trustees
- Jonne Soininen, appointed by the **NomCom** (2 year term)
- Ed Juskevicius, appointed by the **NomCom** (2 year term)
- Ex officio/non voting
  - IETF Chair
  - IAB Chair
  - ISOC President/CEO
- Non voting
  - Ray Pelletier, IETF Administrative Director



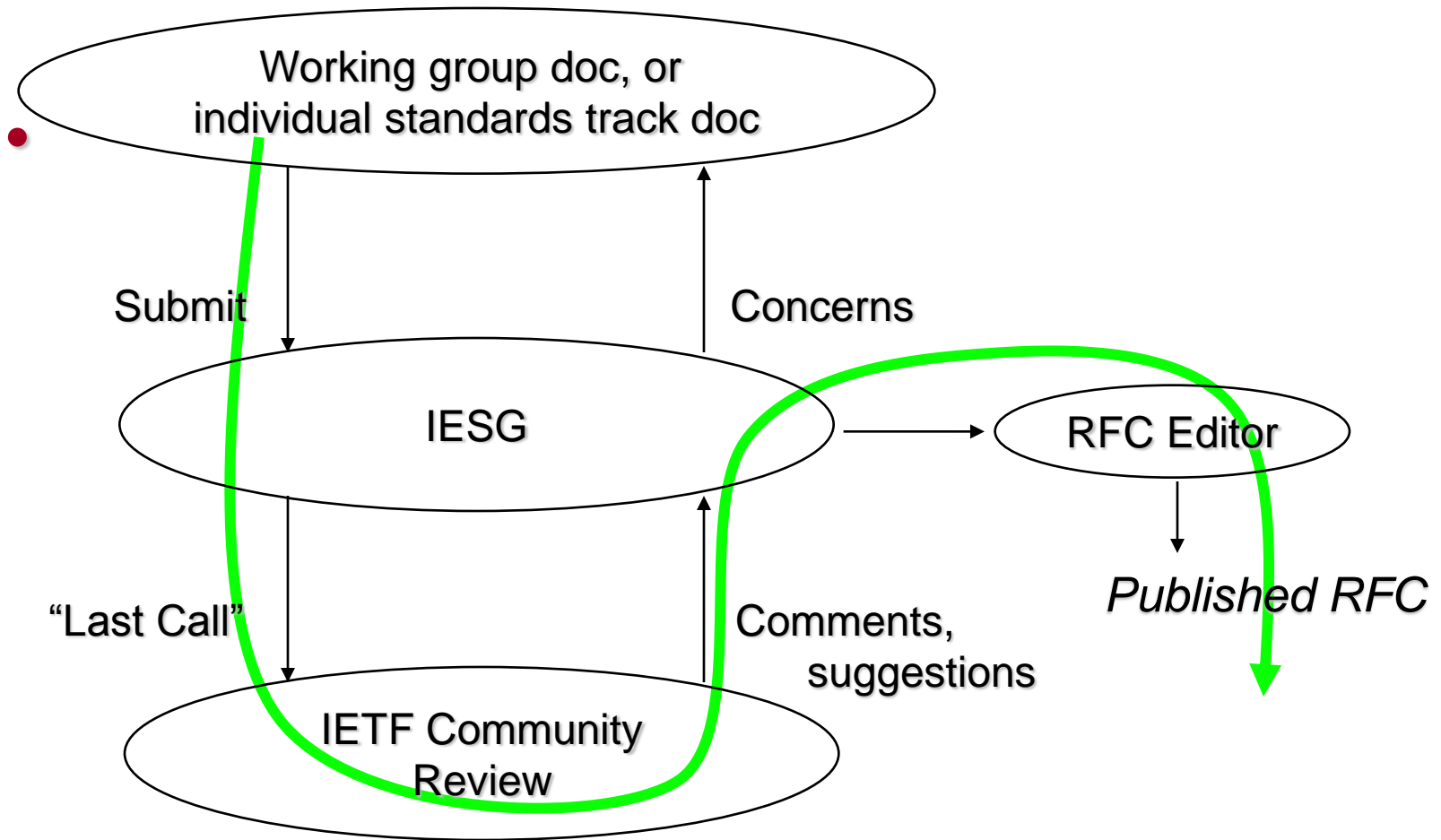
# Top Level View of Organization



# Standards Procedure

1. Proposals published as Internet Drafts (ID)
2. Worked on in a Working Group
3. WG sends IESG request to publish an ID ‘when ready’
4. proposal reviewed by AD
  - can be sent back to working group
5. IETF Last-Call (4-week if no Working Group)
6. IESG review
  - last call comments + own technical review
  - can be sent back to Working Group
7. Publication as RFC

# IETF Submission



# IETF Documents

- Official language English & document format ASCII
- No consensus on alternate format
- All IETF documents are **open**
  - i.e., anyone can download and make copies
- **Internet Draft**
  - IETF working documents
  - Some I-Ds are working group documents
  - **Removed** from *IETF* directory after 6 months
- **RFC**
  - Archival publications (never changed once published)
  - Different types: (**not all RFCs are standards!**)

# What is an RFC?

- RFC used to stand for “Request for Comments”
  - Now just a (brand) name
  - Now tend to be more formal documents than early RFCs
- IETF document publication series
  - RFC 1 (Host Software - Apr 7 1969), now over 6000 ...
- Not all RFCs are standards!
  - Many types of standard track RFCs (BCP, PS, DS, STD)
- RFC Editor
  - Publishing arm of IETF, funded by ISOC
  - Gets requests to publish IETF IDs from IESG



# ISOC Pakistan Islamabad Chapter

Established in 2012  
after a number of  
in-formation meetings

Governed by well  
defined by-laws

A platform for  
ALL Internet  
community



Meetings, events,  
few large events

...

Executive Council,  
5 elected members  
Chair, Vice Chair

Chapter Officers,  
President, V. President,  
Treasurer, G. Secretary

Any question ?