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# Internet Engineering Task Force (IETF)

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Making the Internet work better!

# IETF Mission

Make the Internet work better by producing high quality, relevant technical documents that influence the way people design, use, and manage the Internet.

[RFC 3935]

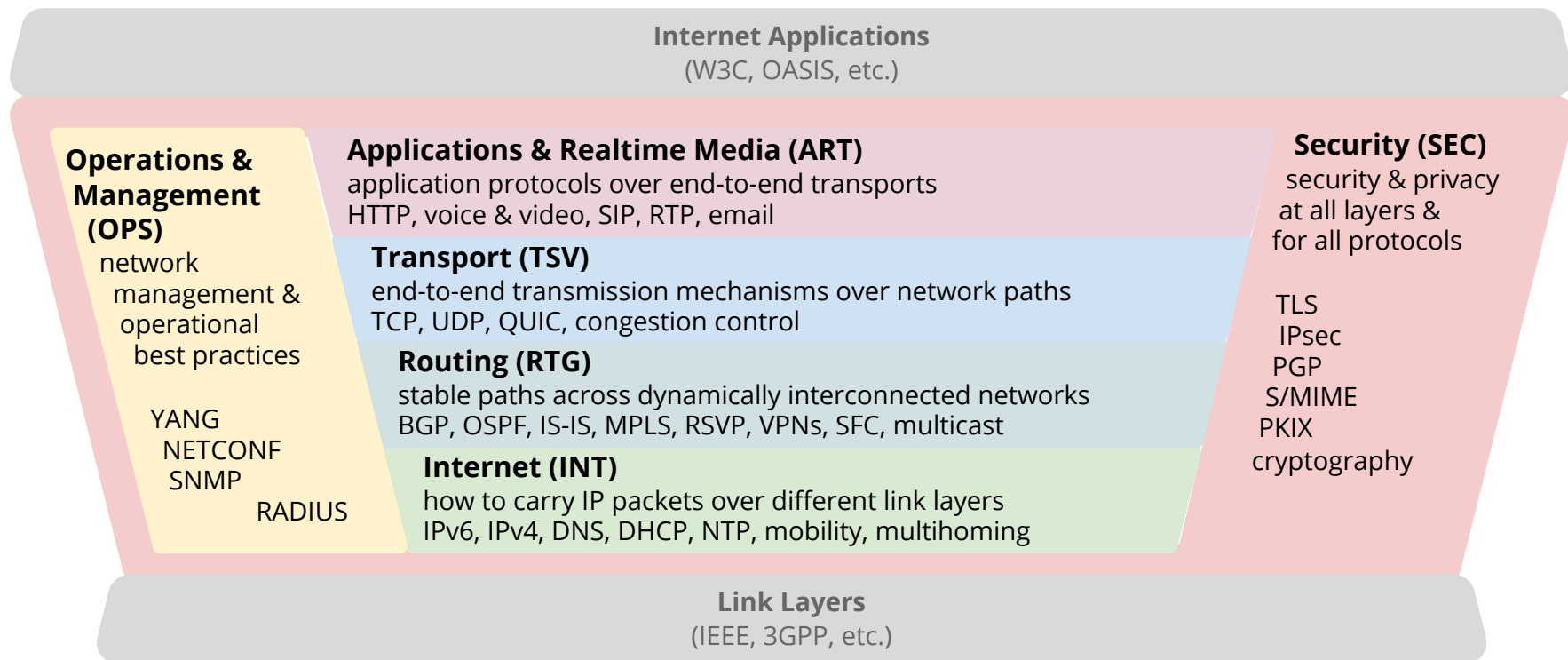
# IETF

## Open Internet Standards

- Open standards are key to allow devices, services, and applications to **interoperate across a interconnected, heterogeneous, and global network of networks**
  - All IETF standards are available **online at no charge**, thus facilitating adoption of them.
  - The IETF determines its success by **technical quality and voluntary deployment**
- The IETF process is **open, transparent**, and relies on a **bottom-up consensus-building**
  - **Everybody may participate**, no membership
  - All work like Internet-Drafts and email archives are **publicly available**
  - Decisions are based on **rough consensus**
- **Openness** in both the technical standards itself as well as the standards development process is the basis for **innovation** in and on top of the Internet and **key to its success**.

# IETF

## Work Areas and Key Protocols

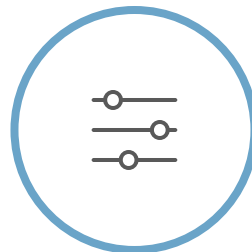


## Examples of Current Work



### Improving security and privacy

to ensure the Internet is trusted as a medium for communications and collaboration



### Automating network management

to improve the efficiency of operating networks that are increasingly large and complex



### Developing new transport technology

to enhance the ability of applications to send data across a growing and diverse Internet



### Enabling the Internet of Things

by infusing connectivity among objects, sensors, and other devices with constrained capabilities

# Global IETF Community



# IETF by the numbers in 2022

<https://www.ietf.org/blog/ietf-snapshot-2022/>

## 6654 Participants

in all IETF activities (mailing list posters, meeting participants, I-D authors)\*

## 3839 Registered

IETF Meeting participants

## Documents

**811** Internet-Drafts (I-D) submitted†

**2728** I-D authors

**194** RFCs published

## 2407 Unique

meeting participants

## 104,000 Messages

sent to IETF mailing lists

## 3604 Individuals

posting to IETF mailing lists

## Working groups

**126** Active Working groups

**8** new Working Groups chartered during 2022

**4** IETF Working Groups concluded during 2022

*\* based on unique email address used to register for IETF events, submit I-Ds, and post to IETF mailing lists*

*† Unique I-D names not counting different versions of the same I-D submitted to the IETF I-D archive*

All information as of 31 December 2022



## How does IETF work?

- You are an **individual** when you participate at IETF
  - No membership / No dues!
  - Mostly sponsored by companies/institutions
  - But we are individuals, i.e. individual opinion and technical arguments matters only!
- Areas and Working Groups
- Mailing List is all that matters
  - All formal decision on the list
- IETF has 3 meetings per year
  - High-bandwidth F2F communication
  - Cross Area collaboration
- **Rough Consensus**
  - Measure of opinions, but no voting!
- Running Code
  - IETF Hackathon
  - Datatracker Code Sprint



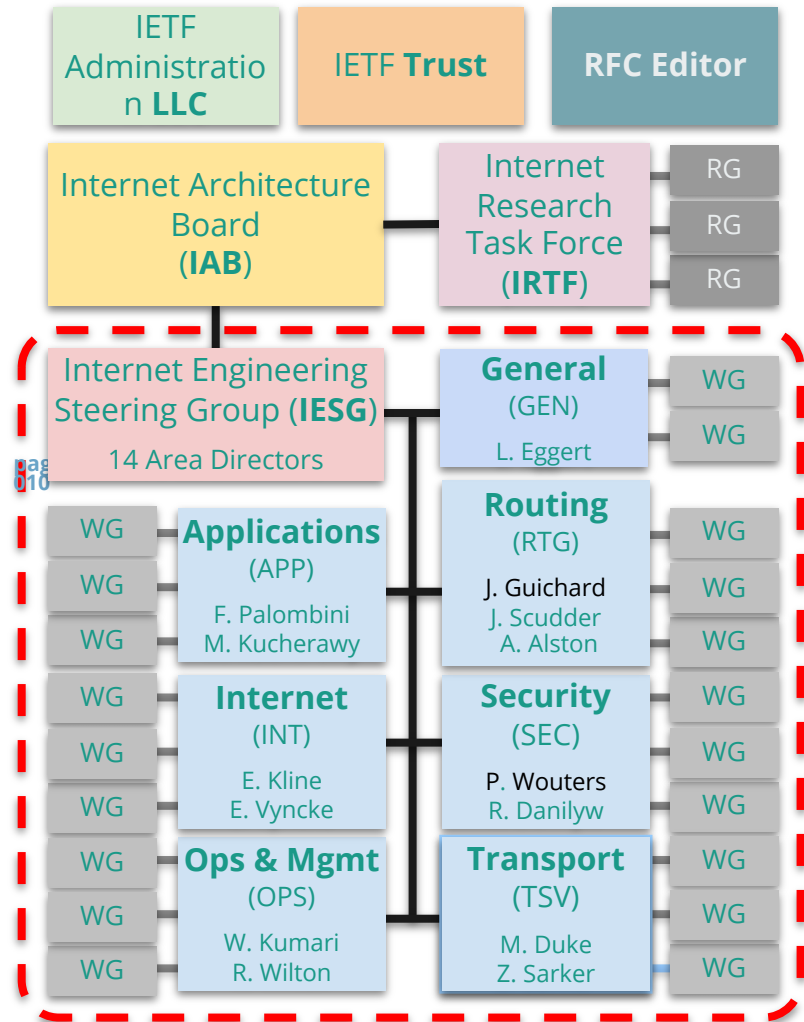


## IETF Areas & Working Groups

- The IETF divides its work into a number of **Areas**, each comprised of working groups.
  - Applications and Real-Time Area (art)
  - General Area (gen)
  - Internet Area (int)
  - Operations and Management Area (ops)
  - Routing Area (rtg)
  - Security Area (sec)
  - Transport Area (tsv)
- Areas have Area Directors (ADs) that forms the Internet Engineering Steering Group (IESG)
- **Working Groups (WGs)** are the primary mechanism for development of IETF specifications and guidelines.
  - They are created with a charter that describes the specific problem or deliverables they will deliver.
- WG have WG co-chairs

# IETF Organizational Structure

- IETF is structured into seven **areas**
- Internet Engineering Steering Group (**IESG**) = all area directors (**ADs**)
  - Approves all Internet Standards
  - Manages technical work
  - Starts/ends WGs
- Internet Architecture Board (**IAB**)
  - Architectural oversight
  - Liaison management
  - Appointments & ISOC/IANA





# What is RFC?

- Request for Comment
  - The name is historic
    - it was created as a way to share notes among researchers.
  - RFC Series has a longer history (1969) than the IETF (1986)
    - By Steve Crocker
    - Internet Pioneer Jon Postel was RFC Editor for 28 years!
- Now the discussion is on the mailing list
- Ideas are published as Internet-drafts
  - If you want to contribute to IETF, this is where you start!
- The final consensus ideas are published as RFCs
  - An archival document
  - Over 9400; around 200 RFCs per year!
  - RFCs can be from other streams (apart from IETF)



## Internet-Drafts (I-Ds)

- Working documents
  - Capture ideas or discussion points
  - Multiple revision leading upto RFCs
- I-Ds are posted (not published)
  - Anyone can do it
- Starting point for discussion
  - Don't have to complete/perfect
  - They may go many changes, completely re-written, merged or abandoned!
- I-Ds expire in 6 months
  - Referenced as “work in progress”
- Working Group **Adopted** I-Ds
  - When a WG is ready to develop a particular document, it "adopts" an existing individual document as a starting point.
  - Leads to change in the name
    - draft-ietf-<wgname>-...  
from draft-<lastname>-...

### Internet-Draft (I-D)

- Active **working documents**
  - *Not finalized and not stable*
- **Anyone can submit an I-D**
  - *draft-yourname-...*
- Only **some I-Ds are Working Group documents**
  - *draft-ietf-wgname-...*

### RFC (Request For Comment)

- **Archival** publication series
  - RFCs never change once published
- **Not all RFCs are standards**
  - Also: Informational, Experimental
- **Not all RFCs are IETF documents**
  - Also Internet Architecture Board (IAB), Internet Research Task Force (IRTF), others



## Towards Consensus

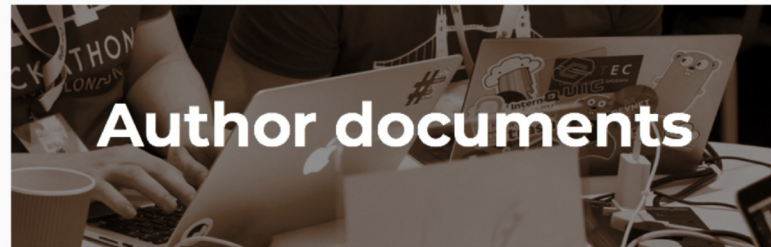
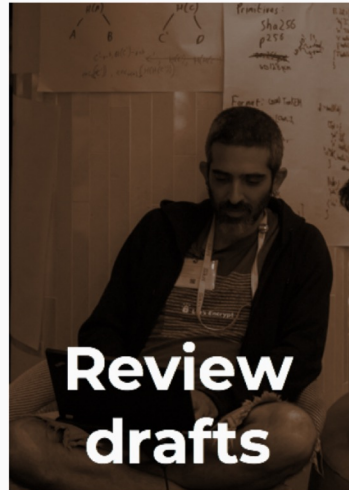
- You need to get agreement and support from across the WG
  - It could be rough! It is NOT a majority rule!
- Consensus doesn't require that everyone is happy and agrees that the chosen solution is the best one. Consensus is when everyone is sufficiently satisfied with the chosen solution, such that they no longer have specific objections to it.
- You must address any valid technical objection
  - Address, not necessarily accommodate!
- Read more
  - RFC 7282: On Consensus and Humming in the IETF



## Key Areas of Interest at IETF

- DNS
- HTTP
- Routing - BGP, OSPF, ISIS
- IoT
- IPv6
- MPLS
- Segment Routing
- Traffic Engineering
- Security - TLS, IPsec..
- Transport - QUIC, TCP..
- Real Time communication - WebRTC
- Network Management - YANG, NetConf..
- Autonomic Networking
- Data Center Networking
- Measurements

# Ways to participate in the IETF







## Few tips to participate in IETF

- Join the mailing list - <https://www.ietf.org/how/lists/>
- Attend IETF meetings - <https://www.ietf.org/how/meetings/>
  - Online with Fee Waiver are readily available
  - Onsite special waivers can be looked into
- Prepare for the meeting
  - Agenda, slides, internet drafts are posted in advance
  - Check past discussions - mailing list archives, minutes
  - Pick a small set of sessions to prepare in-depth (be a tourist for the rest)
- Ask for help
- Learn the culture
- IETF 117 is ongoing - <https://www.ietf.org/how/meetings/117/>

# Resources

- IETF web site: <https://www.ietf.org/>
- Getting started in the IETF: <https://www.ietf.org/about/participate/>
- Newcomers' tutorials:  
<https://www.ietf.org/about/participate/tutorials/newcomers/>
- Next meeting(s): <https://datatracker.ietf.org/meeting/upcoming>
  
- RFC and Internet-draft search: <https://datatracker.ietf.org/>
- Working groups (includes chairs' contact information):  
<https://datatracker.ietf.org/wg/>
  
- Author guidance: <https://authors.ietf.org/en/getting-started>
- Recommend markdown format tool chain: <https://authors.ietf.org/drafting-in->



# Thank You!

