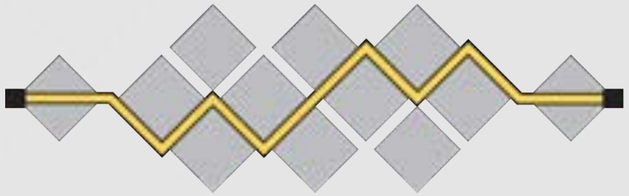
IETF Roundup for APRICOT 2024



IETF®

Making the Internet work better

Innovation 1, 28 February 2024

Introduction

Dhruv Dhody
IAB Member
dd@dhruvdhody.com

> ***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.*
>
> RFC 3935

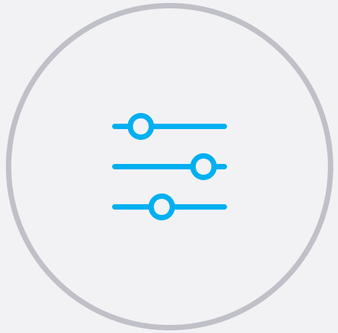
IETF
Open Internet Standards

- 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
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

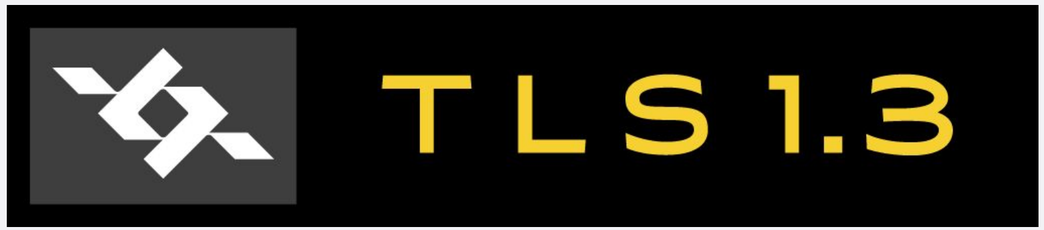
Developing new transport technology

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

IETF
Recent Major Protocol Development Efforts



Standard spotlight: WebRTC

Standards published by the IETF define the core **WebRTC protocol** that enable conferencing services used by billions of people around the world

Code, APIs, and standards has made it simple to add real-time communications functionality to any application.

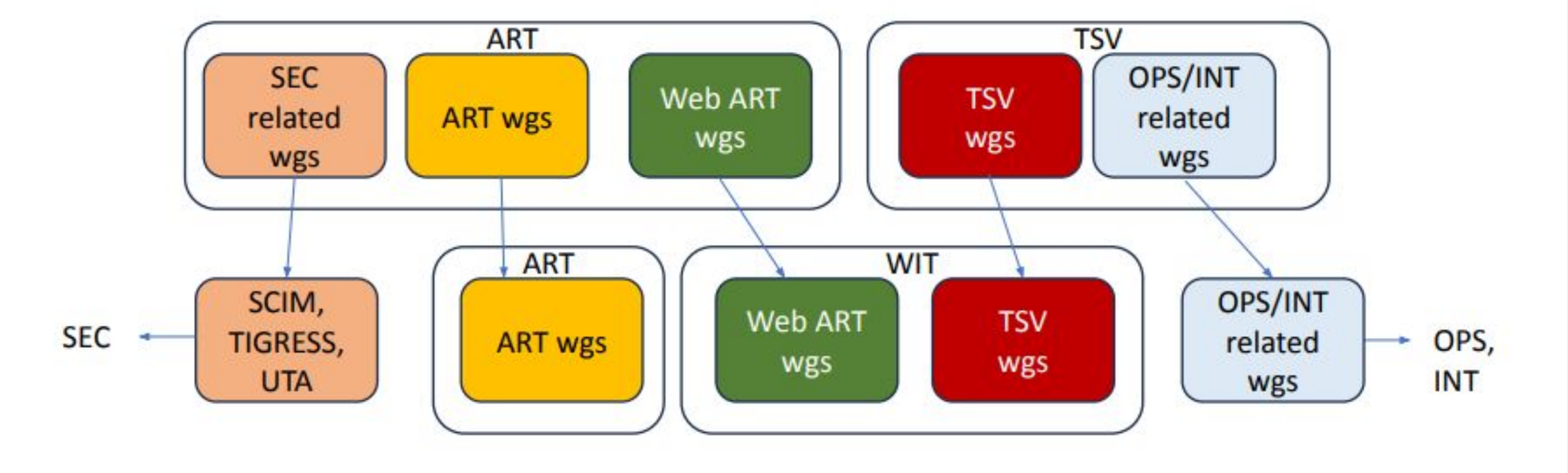
Work is already underway in the IETF to extend WebRTC.

We believe in: Rough consensus and running code

David Clark, 1992

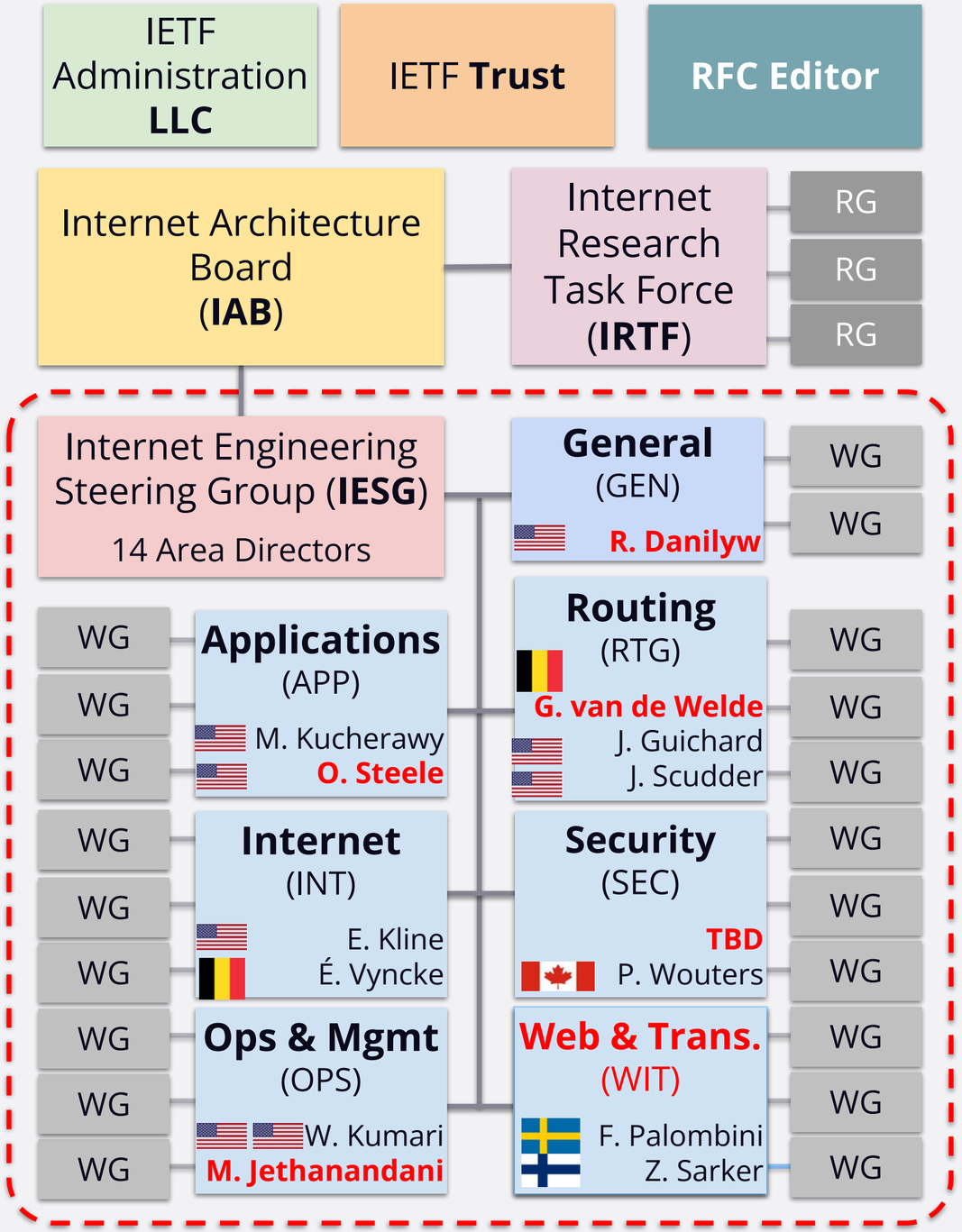
IETF Area
A new one - “WIT”

- **W**eb and **I**nternet **T**ransport
- Part of TSV and ART will merge to form a new area!
- TSV area will be closed!

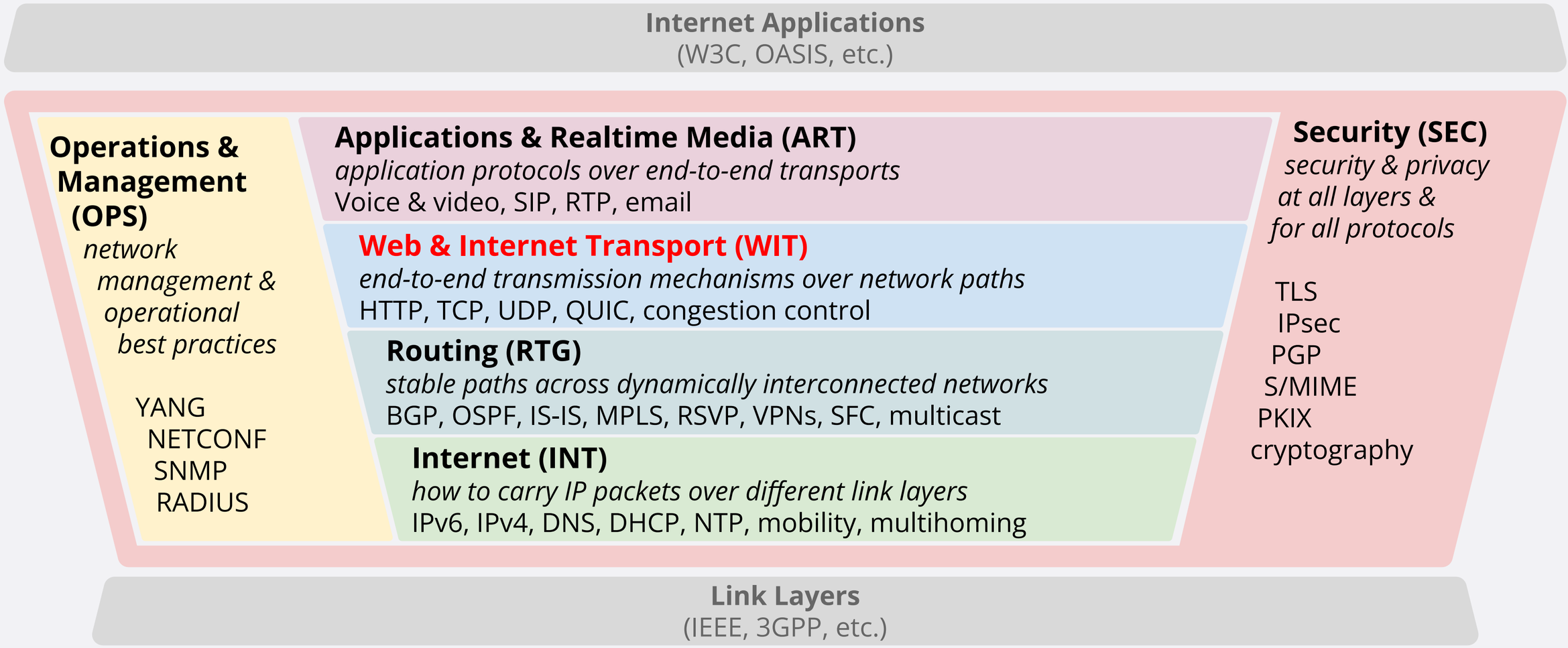


IETF
Organizational Structure

- IETF is structured into seven **areas**
  - Each with area directors (**AD**s)
- Areas are structured into **working groups** (**WG**s)
  - Each with WG chairs
- Internet Engineering Steering Group (**IESG**) = all ADs
  - Approves all Internet Standards
  - Manages technical work
  - Starts/ends WGs



IETF
Work Areas and Key Protocols



News from IETF 118

Not an official report

IETF
Recent BoFs (Birds of Feather session)

- DULT: Detecting Unwanted Location Trackers
  - Security and Privacy implications of malicious trackers and locating them
  - Protocol between tracker and nearby devices
- SPICE: Secure Patterns for Internet CrEdentials
  - Digital credentials to meet privacy, security and sustainability objectives as required for business and governments
- WISME: Workload Identity in Multi System Environments
  - Secure workload identity for cloud include s/w stack, transactions, user, authority etc

IETF
Recent WGs formed

- NMOP: Network Management Operations
  - Operator problems with network management protocols and models
  - Integration issues in large scale networks
  - Inputs from operators to identify existing/anticipated deployment issues with network management technologies, evaluate potential solutions etc
  - Incubate ideas, experiments, discuss use cases/requirements
  - Examples
    - NETCONF/YANG Push integration with Apache Kafka & time series databases
    - Anomaly detection and Incident management
    - Issues related to deployment/usage of YANG topology modules (e.g., Digital Map)

IETF
Recent WGs formed

- CATS: Computing-Aware Traffic Steering
  - Network edge steering traffic from clients to the many sites that offer the service taking various compute and network metrics into consideration.
- IVY: Network Inventory YANG
  - Core model for Inventory of network equipments including asset lifecycle management and operations
- TVR: Time Variant Routing
  - Routing with predicted variations (restoration, activation, or loss) to the topology
  - define information and data models that address time-based, scheduled changes to a network
- Keytrans: Key Transparency
  - Verifiability for the identity-to-public-key bindings in an authentication service for E2E encrypted communication.
- CCWG: Congestion Control Working Group
  - Updated RFC 5033 BCP for new congestion control algorithms
- BPF: BPF/eBPF
  - Run untrusted programs in kernel, now being used beyond linux
- Others
  - Structured Email (SML)

IETF
Some topics of interest

- EIMPACT: Sustainability and Environmental impact of Internet Technology
- V6OPS: Happy Eyeballs v3 and Operational presentation by NITK Indian students and Google deployment experience of IPv6-mostly enterprise network
- GROW: Updating BGP Operations and Security - Revisiting RFC 7454 / BCP 194
- TSVWG: L4S Interop and Experience sharing
- NETMOD: YANG Model Versioning
- 6MAN: IPv6 Extension Headers limit, HBH.
- SPRING: Compressed SRv6 Segment list, SRv6 Security consideration,
- INTAREA: Trusted domain SRv6 (ethertype), IP in deepspace
- PANRG: Parts of SCION (Scalability, Control, and Isolation On Next-Generation Networks) taken by the RG

IEPG
Internet Engineering and Planning Group

- The IEPG is an informal gathering that meets on the Sunday prior to IETF meetings. The intended theme of these meetings is essentially one of operational relevance in some form or fashion.
- As per RFC 1690, IEPG is an Internet Service Operators' forum, intended to assist Service Operators to coordinate in operational aspects of managing Internet services.

- Key topics at IETF 118
  - **Packet Discard Reporting** - minimize and report anomalous packet loss with auto-mitigation actions. Also Implementation inconsistency in discard counters
  - Semantic **Metadata Annotation** for Network Anomaly Detection
  - **Starlink** Performance
- Join the mailing list - iepg@iepg.org

IETF
Side meetings of interest

Note: Side meetings are not part of IETF official agenda!

- AIDC
  - New technologies within large scale DC in AI model training
- Applicability of AI in Networks
  - Reinforce learning in Traffic Engineering
  - AI in personalized media
  - Security
- YANG/Kafka integration
- Network Digital Maps
- Network Incident management
- SADCDN
  - Securing Ancillary Data for Communicating with Devices in the Network between content endpoints and network nodes
- Metaverse requirements
- IP in Deepspace
- IPv6 deployments in Enterprise
- Possible 6G impact on IETF

Upcoming IETF 119 in Brisbane!

Thanks APNIC for being the local Host!

16-22 March Brisbane Convention Centre

IETF 119
BoFs (Birds of Feather session)

- DELEG (New DNS Delegation)
  - Discuss better delegation methods for parent zones.
  - Additional capabilities beyond current NS-style delegation, such as
    - aliasing delegation with other domain names,
    - delegating DNSSEC management to operators (i.e. DELEG alias to SVCB containing a DS record),
    - specifying encrypted transports
- SRv6OPS (SRv6 Operations)
  - Operational issues from those deploying SRv6 in their networks
  - Explore potential work items and deliverables in this space
  - Discuss a proposed charter for a dedicated SRv6 Operations Working Group

IETF 119
BoFs (Birds of Feather session)

- SCONEPRO (Securely COmmunicating NEtwork PROperties)
  - the topic formerly known as SADCDN
  - Ability for network operator to signal network properties to the application in a secure manner
    - maximum achievable bandwidth for a video using QUIC
    - video shaper bitrate
- Others
  - ALLDISPATCH - experiment at combining the various Area Dispatch sessions into one meeting to discuss where to take new work.
  - First meeting for NMOPS WG
  - DULT, SPICE, and WISME are likely to be chartered before the IETF and might have their first WG meeting during IETF 119 week.
  - New topics Blog: https://www.ietf.org/blog/ietf119-new-topics/

IETF 119
Take Note

- Hackathon
  - Developers and subject matter experts gather during the weekend to collaborate and develop utilities, ideas, sample code and solutions that show practical implementations of IETF standards.
- Technology Deep Dive
  - Two sessions on BGP
- IEPG focus on topics with operational importance
- New IETF Leadership will be seated during the IETF Plenary
- IABOpen with talks about Thread group and encryption laws in Australia
- IRTFOpen with talk on Anomaly Detection from the ANRP Winner
- Full agenda at https://datatracker.ietf.org/meeting/119/agenda

Global IETF Community

IETF
Why Network Operators need to participate?

- Be on top of the **new** internet protocols and extensions
- Lot of work explicitly on **Network Operations**
  - input of operators is quite valuable to keep this work vibrant and relevant.
- Why should you care?
  - Are these **real problems** that impact you?
  - Are these real network **requirements**? What's missing?
  - Are these in sync with operator's **reality**?
  - Is this going to be easy to **deploy**?
  - How would I **troubleshoot** this?
  - You might be deploying this and then you will most definitely care and it's usually too late to do anything!

IETF
How to get your voice heard...

- Tell your **requirements** directly to the IETF -
  - Don't let vendors and researchers tell what the operator needs!
  - Bust myths with clear evidence and insights
  - Rationalize requirements that are of immediate need
- Provide **insights** that only you as an operator has -
  - Operational considerations are sometimes an after-thought, you can make sure that is not the case!
- **Don't shy away** from using your “operator” card!
  - Your voice is the most important one, as it will be you who would be operating the network when a new feature/protocol is deployed!

IETF
Tips to Participate...

- Identify what interest you, **pick 1-2 key WG**, monitor a few more!
  - Join with mailing list (use digest mode for a single mail) if you are worried about number of emails
  - Use IMAP to read when free (if you don't want to subscribe)
  - Start reviewing stuff and provide inputs via mailing list (and github)
- Start with **remote participation** to IETF meetings
  - Use fee waivers if necessary
  - Participate in IEPG, Hackathon, technology deep dives, and other “side” events!
- Play special interest to **new work**
  - where it is easier to join in and the operators input is needed!
  - Dispatch WG also see proposals for new work
- Ask for help! Guides available for new participants!

thank you.