



# Contributing to the IETF

How to play your part, and how RFCs are made

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India Internet Engineering Society (IIESoc)

Connections : A pre-IETF India Forum, November 13th - November 14th, 2019

# Agenda

- What?
- Why?
- Who?
- How?
- When?
- Where?



# More Precisely...

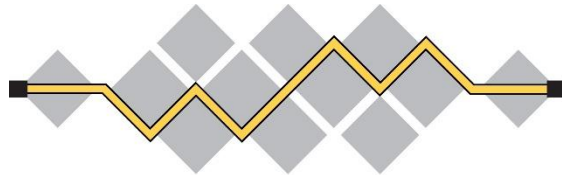
- What is the IETF?
  - Very high level discussion
  - Not a deep dive into structure and organisation
- Where do RFCs Come From?
- How to Bring Your Idea to the IETF
- How to Make an Impact at the IETF
- References and Other Resources

# What is the IETF? What Does it do?

“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.”

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.

- If you want to work on things unrelated to the Internet, you might be in the wrong place



**I E T F<sup>®</sup>**

# How Does the IETF Work?

- The IETF is an open community of individuals
  - Most of us are sponsored by companies or academic institutions
  - But we participate as individuals
    - Individual opinions and technical ideas are what count
- Work is divided up into Working Groups
  - Charter scopes the work to a focused topic (for example a protocol)
  - Working Groups are collected into Areas (for example Routing, Security, ...)
- Participation is on mailing lists and at meetings
  - All formal decisions are made on mailing lists
  - Meetings are very good for high-bandwidth communications
- Decisions are made by “rough consensus”
  - Difficult to define, but you know it when you see it!
  - We take a measure of opinions, but we do not vote
  - Please read RFC 7282 : On Consensus and Humming in the IETF
- Implementations (i.e., running code) are important



*“We reject kings, presidents and voting. We believe in rough consensus and running code.”*

Dave Clark (1992)

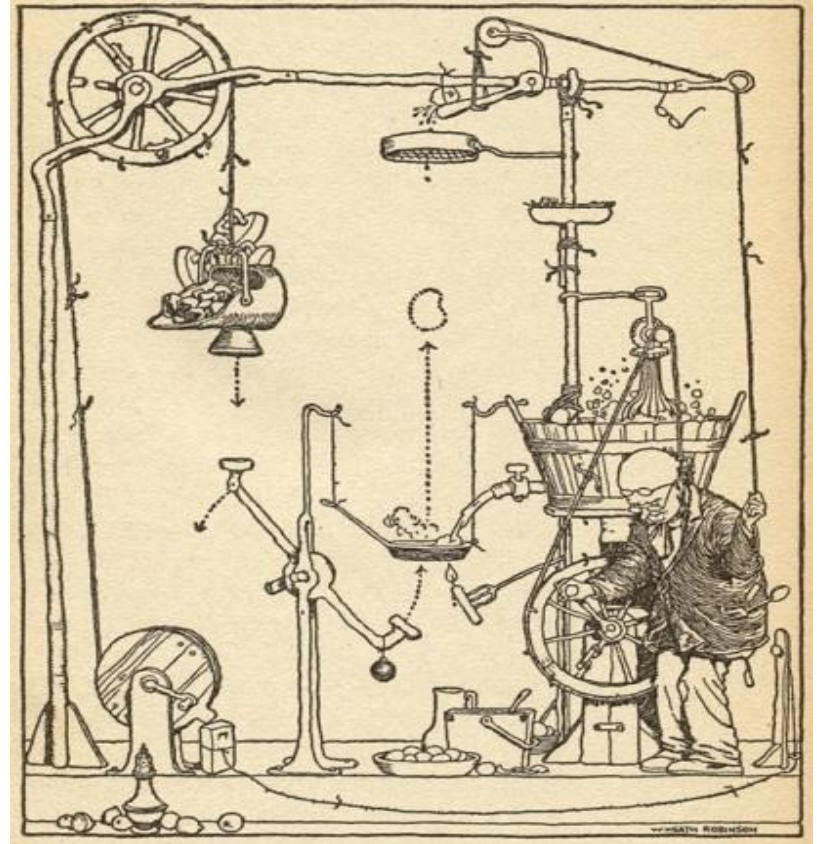
# Request For Comments (RFC)

- The principal standards output of the IETF is the RFC
- The name is historic
  - It was a physical paper mailed out in the early days
  - A record of discussions or ideas and a starting point for further discussion
- Now we have our discussions on mailing lists and publish ideas in Internet-Drafts
- We publish our consensus ideas in RFCs
  - Over 8600 published to date
  - Roughly 200 new RFCs every year
  - You can still comment on RFCs, and they often get revised



# How are IETF Standards Made?

- It's a long and complicated process
- You need to know:
  - How to bring ideas
  - How to participate
  - What the process is
    - We'll do this first



# Internet-Drafts

- Internet-Drafts (I-Ds) are transient working documents
  - They capture ideas or discussion points
  - They are worked on and revised to become RFCs
- I-Ds (or drafts) are “posted” not “published”
  - Anyone can author an Internet-Draft
  - You just write it and post it through the web-based datatracker
- As the starting point for discussion...
  - They don’t have to be complete or perfect
  - They may attract lots of interest or none at all
  - They may have to be completely rewritten
  - They may merge with other work
  - They may be abandoned
    - Not all I-Ds become RFCs
- I-Ds have a nominal life of just 6 months
  - (Although they persist in the archives)
  - You must reference them as “work in progress”
  - If you implement one it is at your own risk



# How to Produce a Draft

- A number of languages exist to write in
  - XML
  - nroff
  - kramdown
  - Word
- Tools and schemas exist to format text
  - xml2rfc is the most important



# What Does an Internet-Draft Include?

First-page header \* [Required]

Title [Required]

Abstract [Required]

RFC Editor or Stream Note \* [Upon request]

Status of This Memo \* [Required]

Copyright Notice \* [Required]

Table of Contents \* [Required]

Body of the Memo [Required]

- Introduction [Required]
- Requirements Language (RFC 2119)
- MAIN BODY OF THE TEXT
- :
- IANA Considerations [Required in I-D]
- Security Considerations [Required]

References

Acknowledgements

Contributors

Authors' Addresses [Required]

# Document Format

- Internet-Drafts and RFCs available in ASCII text
  - Behind the times?
    - Looks “clunky”
    - Not pretty on Apps
    - Artwork is a challenge (“ASCII-art”)
  - 50 years of RFCs are still readable
- Moving with the times ;-)
  - PDF and HTML versions automatically generated
  - SVG graphics supported
  - Non-ASCII characters supported

# Filenames

- A really useful clue to what is going on
  - Includes a zero-based revision number
- Individual drafts
  - draft-yourname-wgname-subject-nn
    - draft-farrel-mpls-sfc-03
    - WG name is your target
- Adopted drafts
  - draft-ietf-wgname-subject-nn
    - draft-ietf-mpls-sfc-07

# Intended Status?

- RFCs end up classified according to their content
  - Proposed Standard
    - It's a specification of something to implement or deploy
    - After a long time and implementation may move to be an Internet Standard
  - Informational
    - The document provides information, advice, or guidance
    - Frameworks, architectures, requirements, use cases, etc.
  - Experimental
    - The description of an experimental protocol
  - Best Common Practice (BCP)
    - IETF process documents
    - Important deployment guidance
  - Historic
    - Archival documents (usually recording how things used to be)
- Internet-Drafts are marked with the intended status of the final RFC

PCE Working Group  
Internet-Draft  
Updates: 8231 (if approved)  
Intended status: Standards Track  
Expires: May 9, 2020

A. Farrell  
Old Dog Consulting  
November 6, 2019

~~Updated Rules for Processing Stateful PCE Request Parameters Flags~~  
~~draft-ietf-pce-stateful-flags-00~~

Abstract

Extensions to the Path Computation Element Communication Protocol (PCEP) to support stateful Path Computation Elements (PCEs) are defined in RFC 8231. One of the extensions is the Stateful PCE Request Parameters (SRP) object. That object includes a Flags field that is a set of 32 bit flags, and RFC 8281 defines an IANA registry for tracking assigned flags. However, RFC 8231 does not explain how an implementation should set unassigned flags in transmitted messages, nor how an implementation should process unassigned, unknown, or unsupported flags in received messages.

This document updates RFC 8231 by defining the correct behaviors.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <https://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on May 9, 2020.

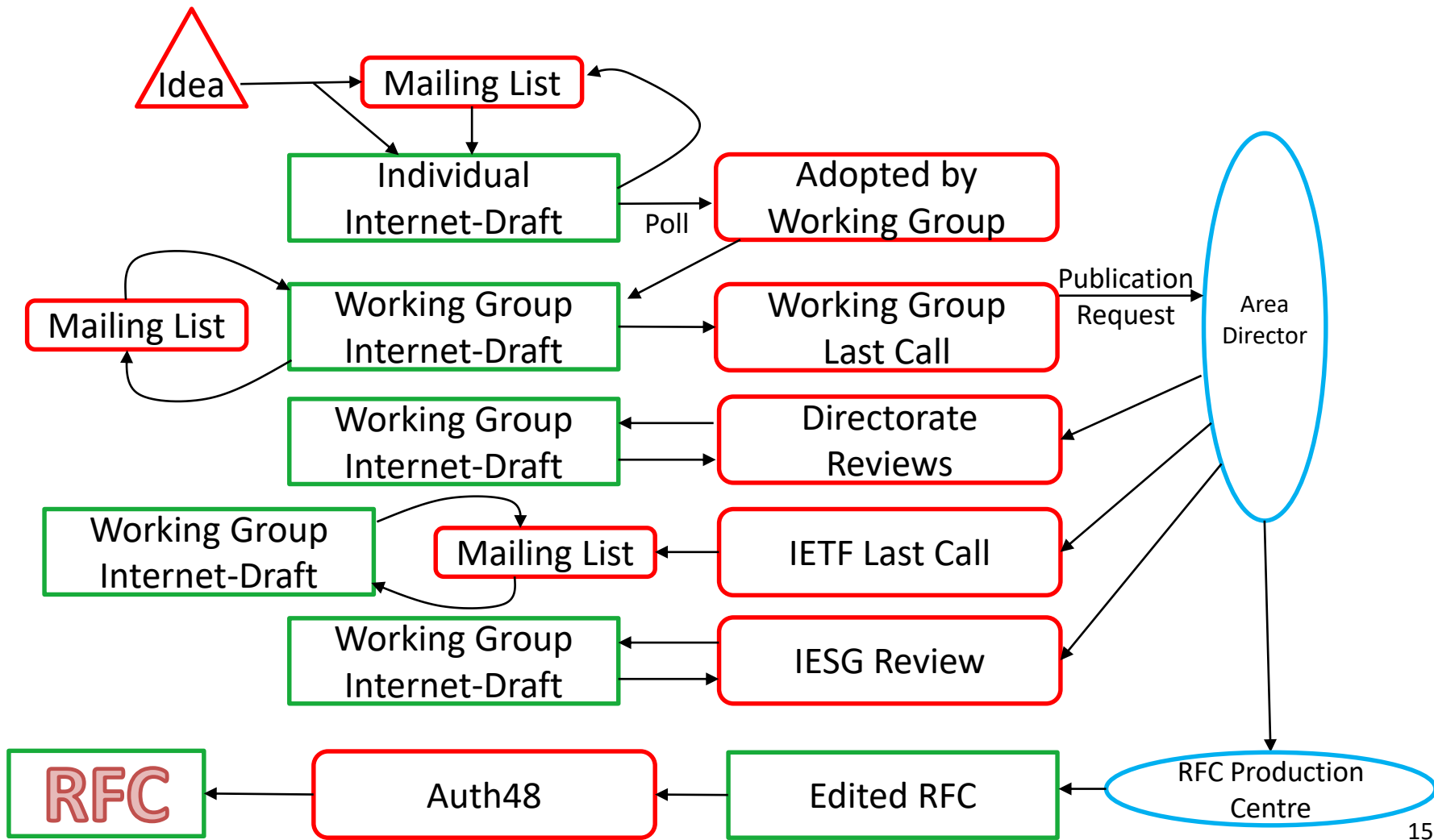
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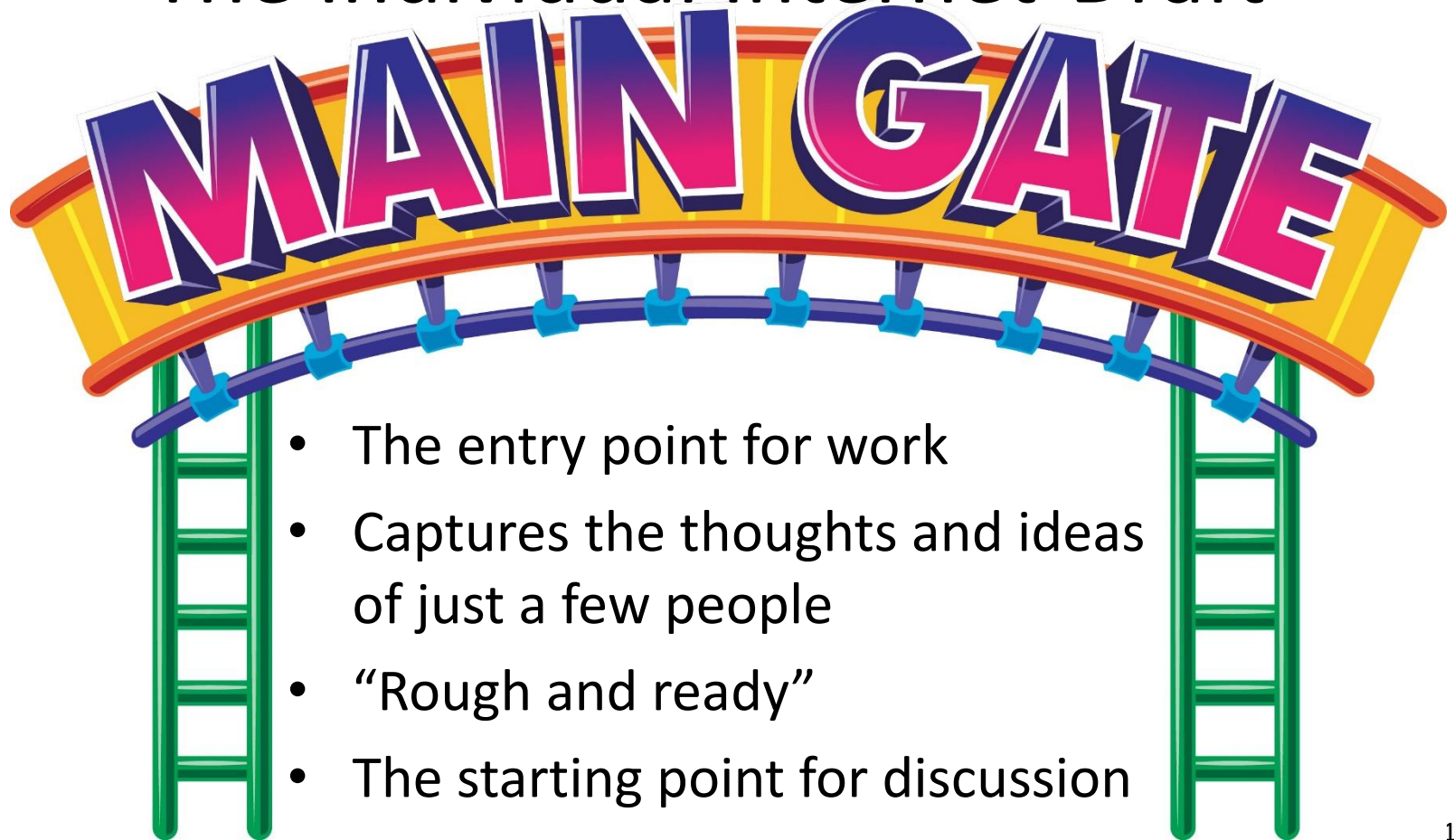
This document is subject to BCP 78 and the IETF Trust's Legal Provisions Relating to IETF Documents

Farrel	Expires May 9, 2020	[Page 1]
♀		
Internet-Draft	Stateful PCEP Flags	November 2019

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# The Individual Internet-Draft



- The entry point for work
- Captures the thoughts and ideas of just a few people
- “Rough and ready”
- The starting point for discussion



# Discussing an Internet-Draft

- You want to discuss your draft with others
  - It's scary!
    - People might not understand you
    - Your “baby” might get criticised
    - But all reviews are good reviews
  - You need to plant your flag
    - You were here first
- Don't assume that anyone will notice that you posted your draft
  - You need to tell them: send messages to relevant mailing lists
  - Ask for reviews
  - Ask for help
- Keep the conversations alive and positive
  - Show people it is worth talking to you
  - Show the working group chairs that people care about your idea
- Ask to present your idea at a working group meeting
  - You can do this even if you are a remote participant

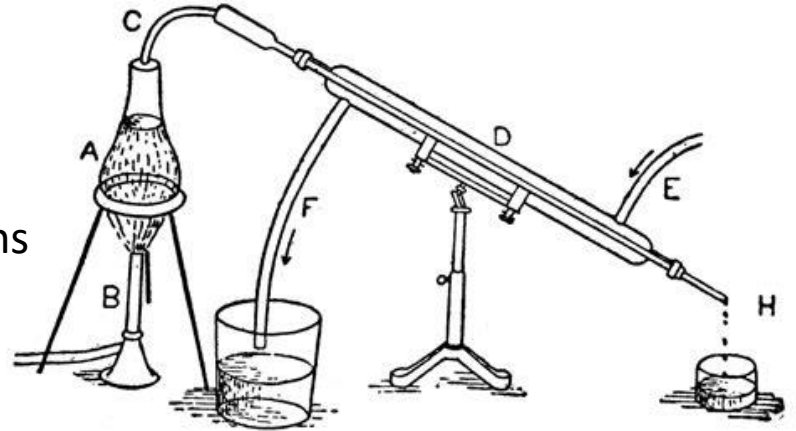


# When a Working Group Adopts a Draft

- If the working group chairs think...
  - Your idea is in scope for their charter
  - There is enough interest in the work
    - Usually measured by discussion on the list
  - The working group is not too busy
- Then they can adopt your draft
  - Usually there is a poll on the mailing list to test the consensus
- Once adopted
  - The filename changes to show the fact
  - The contents of the document no longer belong to the authors!
    - The working group can demand any change they like
  - The editors of the document can be changed by the chairs

# Progressing a Working Group Draft

- Work does not stop when an I-D is adopted
  - Actually, that's when it starts
- Lots of polish and refinement
  - Explanations
  - Error paths
  - Security and Manageability considerations
  - Feedback from implementers
  - Reviews and discussion
- Expect:
  - Continued discussions on the mailing list
  - Five or six revisions of the draft
  - Occasional updates in WG meetings to report on changes or ask for help



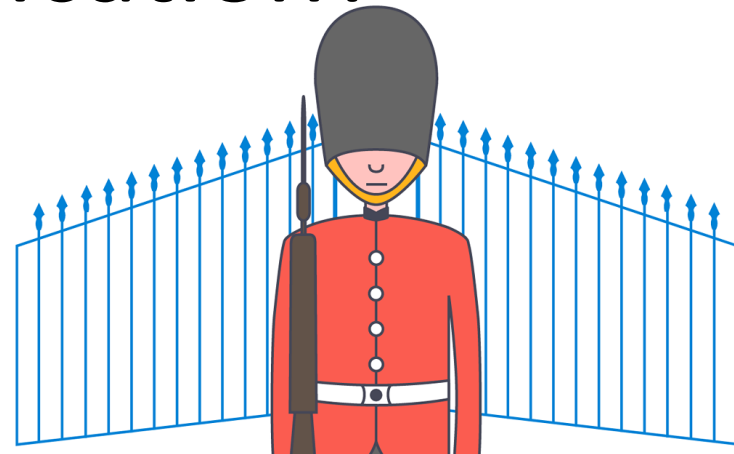


# Is it Complete?

- When the authors think everything is done...
  - They have to convince the WG chairs
- Working Group last call
  - Last chance for WG participants to spot problems
  - Test for consensus to move to publication
- Directorate reviews
  - Experts from the different areas are asked to do focused reviews
- IETF last call
  - Last chance for whole of the IETF to spot problems or complain
  - Usually only a test for absence of consensus

# Suitable for Publication?

- IESG Review
  - The IESG sees themselves as gatekeepers
    - They are responsible for
      - Technical quality
      - Stability and security of the Internet
      - The “IETF brand”
- The IESG review documents on a two-week cycle
  - ADs often commission reviews from their Directorates
  - Many ADs read all documents
- They ballot on each document
  - Yes
  - No objection
  - Discuss – issues to be resolved before publication
  - Abstain – issues that are unlikely to be resolved by any discussion
- Documents progress to the RFC Editor when all Discusses are cleared and there is at least one “Yes”



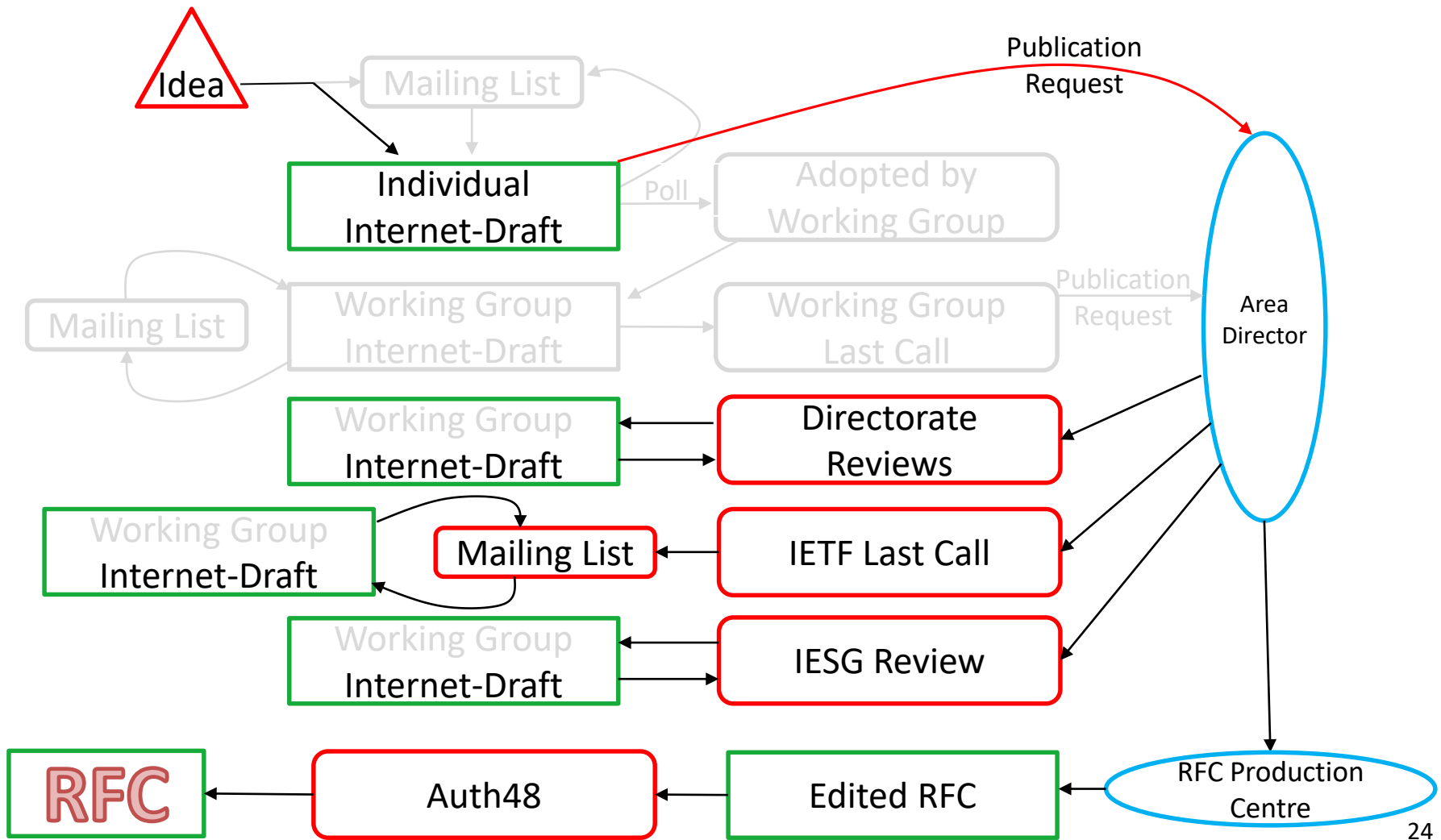
# Publication Process

- The RFC Publication Centre (RPC) is a team
  - Skilled technical copy editors
- They will fix many issues:
  - Format
  - Spelling
  - Grammar
  - Clarity
  - Inconsistencies
- But don't assume they will get everything right
  - Try to polish the document yourselves
  - Check and double check their changes
- Author Forty-Eight Hours (Auth-48)
  - A final sign-off by all authors prior to publication
  - Usually lasts longer than two days



# No Working Group? No Problem

- We've just described the IETF Stream
  - Can also be AD Sponsored
    - There is no obvious Working Group home
    - The work belongs in the IETF
    - Jump from Individual I-D to IETF last call





# Other Sources of RFCs

- Everything starts as an Internet-Draft
- Not possible for Standards Track RFCs
- Three other sources
  - Internet Research Task Force (IRTF)
  - Internet Architecture Board (IAB)
  - Independent Submission Stream

# IRTF



- Longer-term, research-based work
  - Speculative
  - Exploratory
  - Academic
- Arranged into Research Groups
  - Topics can be quite large, but still governed by charters
- Operational procedures much the same
  - Individual drafts
  - RG adoption
    - draft-irtf-rgrname-subject-00
  - Replace “AD and IESG” with IRSG
  - No IETF last call
  - IESG is given an opportunity to identify conflict with IETF work

# IAB

- Mainly publishes high-level “thought pieces”
  - Also reports of workshops
- Everything starts as an individual draft
- Usually adopted as an IAB document
  - draft-iab-subject-00
- Usually sent out for community review
  - Consensus is not required



# Independent Submissions

- Under the care of the Independent Submissions Editor (ISE)
  - At the moment, this happens to be me
- When something doesn't have a home in the IETF
  - Not enough interest or support
  - A different opinion to the consensus
  - Reviews and reports
  - Must not conflict with ongoing IETF work
- No IETF or IESG review
  - Not an IETF RFC
  - No IETF consensus
  - ISE commissions expert reviews
  - IESG is given an opportunity to identify conflict with IETF work or harm to the Internet
- Roughly 5% of all RFCs
- The Independent Stream is sometimes called a “safety valve”
  - It allows publication even when there is a conspiracy against you!



**And breathe...**

# Why Participate at the IETF?

- Many reasons
  - Promote the company name
  - Advance the company ideas
  - Advance customer's ideas
  - For the good of the Internet
  - Because it's fun
- It is important to know why you are doing something

# Communicate

- English is the official language of the IETF
  - You hear every language in the corridors, but:
    - English is the only language used on the mailing lists
    - All documents are written in English
    - Meetings are conducted in English
- That makes it really hard for many people 😞

# How To Participate

- Passive participation
- Discussing on mailing lists
- Reviewing drafts
- Contributing text
- Co-authoring drafts
- Meeting assistance
- Leadership positions



# Passive participation

- Many companies do this
  - Just look at the mailing lists and read the drafts and RFCs
  - It is enough to allow you to build competitive products
    - Until you misunderstand something!
  - You can save a lot of money this way

# Discussions on mailing lists

- Always be courteous and constructive
- Ask questions and make suggestions
- Help advance the discussions
  - Build consensus
  - Seek clarity
  - Bring out points that need to be addressed
  - Help others express themselves

# Reviewing drafts

- All drafts need review
- Not just at key times (adoption and last call)
- Reviews should be clear and constructive
  - “If you have nothing to say, it is better to say nothing”
  - Don’t just say “support”
- Look for issues that need to be resolved
  - What needs to be clearer?
  - What needs to be added?
- If you don’t understand, then work is needed
  - Documents should be clear
  - Maybe other people have the same issues

# Contributing text

- The most constructive way to review a draft
  - Authors love it
- When you do a review you often find something missing or very unclear
  - Don't just raise the issue, fix it
- All of the same rules apply as when you send email and do a review
  - Be polite and helpful
  - Offer your text, don't demand it
    - "I've been thinking about this problem. Would the following text help?"
- Additionally you need to follow the practices for authoring drafts (next slide)
  - The problem you are addressing needs to be an important problem
  - The text you send needs to be good text
- Don't expect to become an Author
  - Maybe just a Contributor
  - Possibly just mentioned in the Acknowledgements
  - Sometimes just thanked on the mailing list
  - Occasionally not even thanked!
- But it is all part of the strategy of becoming respected and trusted

# Co-authoring drafts

- Obviously the most significant way to make an impact
  - But there are very many I-Ds posted every year
- Your I-D needs to stand out
  - It is like sales and marketing
    - Good title
    - Clear and meaningful Abstract
    - A problem that people are interested in
    - A good product
    - Endorsed by reputable people
    - Advertised in the right places
      - Mailing lists
      - Word of mouth

# Assisting in meetings

- There are some jobs that need to be done
  - Meeting minutes
  - Jabber scribe
- Can be a challenge for language skills, but...
- Meeting minutes
  - You can take your own notes in your own language
  - You can listen to the recording over and over
  - You can get your minutes reviewed before you submit them
- Jabber
  - Read draft-saintandre-jabber-scribe
  - Main job is to channel comments from remote participants
    - This is easy – just stand up and read from your screen in a clear voice
- These are really good ways to become noticed
  - No-one likes to do the job, but it has to be done
  - You become known and trusted
- Some (but not all) of this is possible for remote participants
  - But it is harder

# Leadership

- Let's leave that as a stretch goal
- But it is worth understanding who the leaders are
  - WG secretary
  - WG chairs
  - Area Directors

<Your idea here>



# How to Introduce New Work to the IETF

- How big is your idea?
  - Small deltas on existing work
  - Use case for existing protocols
  - Large developments
  - New protocols
  - Completely new domains of work
- Is there already an appropriate Working Group?

# Small idea, Obvious home

- Write an Internet-Draft
  - Doesn't have to be complete or perfect
  - Really should be comprehensible
- Socialise the draft
  - Send mail to the WG mailing list
    - Explain yourself!
    - Ask for opinions and help
  - Contact people who you know are interested
    - Find their names on their drafts or on the mailing lists
    - Email is good, coffee is better

# New idea? Unsure where it goes?

- Don't panic!
- Write the draft just like normal
  - Take a guess at which WG
  - Or leave out the WG name
    - draft-yourname-subject-00
- Send notification to multiple mailing lists
  - WGs
  - Areas
- Ask for help from WG chairs and ADs
  - “I've written this draft, where should I discuss it?”

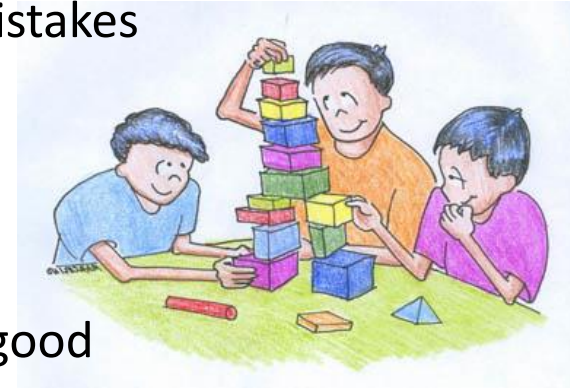
# Larger idea

- Write a draft (or several)
  - Don't try to pack it all into one document
  - Do make sure you explain what your idea is for
    - How will it make the Internet better?
- Build a community of support
  - Compose an “elevator pitch”
  - Socialise your work
- Birds of a Feather (BoF)
  - A special meeting at the IETF to focus new work
  - Determine what needs to be done
  - See if there is support to do it
- Form a Working Group
  - The AD will take the lead after the BoF
  - You'll probably need to help write the charter

# Participation and Perception

# Cooperate

- It is worth remembering that you need to get agreement and support across the WG
  - Rough consensus
- You must work together with your competitors and customers
  - It's a challenge because people point out your mistakes
  - It's a psychological challenge
  - It is good technical fun
  - You meet some really nice and clever people
  - It makes sense to make interoperable protocols
  - But you do not have to tell people how to make good implementations!



# Some thoughts about Culture

- The IETF can feel pretty American
  - That's because it is
    - The origins are American
    - 30% of participants are American
- But 70% are not American
  - China, Europe, Japan
  - Around 50 countries at any IETF meeting
- Respect has to be earned
  - A flawed technical argument will be called out
    - It may be brutal!
    - Can seem rude
      - Not helped by some pretty poor inter-personal skills
  - Earn respect
    - Do good reviews of other work
    - Get reviews of your own work **and listen to them**



# It is about the people

- You thought it was about the technology?
  - Well, it is
  - You have to be technically rigorous
- But it is also about the people
  - Hence, always be nice
  - Be helpful to others and they'll be helpful to you
  - Build personal relationships
    - Chat about work
    - Chat about life
    - Chat about interests
    - Eat food
    - Drink (coffee/tea/anything)



# People are just people

- There are some scary folk out there!



- Rude
  - Technically astute
  - Highly knowledgeable
  - Well-known and well-respected
  - Insecure
  - Bad communication skills
- They're only human

# Wide range of interests

- You'd be surprised!
  - One ex-AD translates ancient Greek
  - Several ex-ADs are learning Hebrew
  - Many are accomplished musicians
  - Lots participate in sports
  - They have families
  - The Internet is not their first career
    - Physicists
    - Anthropologists
    - Taxonomists
- Me?
  - I write books of fairy stories for adults



# References and Resources

- About the IETF
  - <https://www.ietf.org/about/>
    - The Tao of the IETF (<https://www.ietf.org/about/participate/tao/>)
    - Tutorials (<https://www.ietf.org/about/participate/tutorials/>)
    - The Tao of the IETF (<https://www.ietf.org/about/participate/tao/>)
- IETF tools
  - <https://tools.ietf.org/>
    - xml2rfc (<https://xml2rfc.tools.ietf.org/>)
    - idnits (<https://tools.ietf.org/tools/idnits/>)
    - Spell-checker (<https://tools.ietf.org/tools/idspell/webservice/>)
- Datatracker
  - <https://datatracker.ietf.org/>
    - All working groups (<https://datatracker.ietf.org/wg/>)
    - All documents (<https://datatracker.ietf.org/doc/>)
    - Submit new drafts (<https://datatracker.ietf.org/submit/>)
- RFC Editor pages
  - <https://www.rfc-editor.org>
    - Publication process (<https://www.rfc-editor.org/pubprocess/>)
    - Style Guide (<https://www.rfc-editor.org/styleguide/>)

Questions and Follow-up  
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